

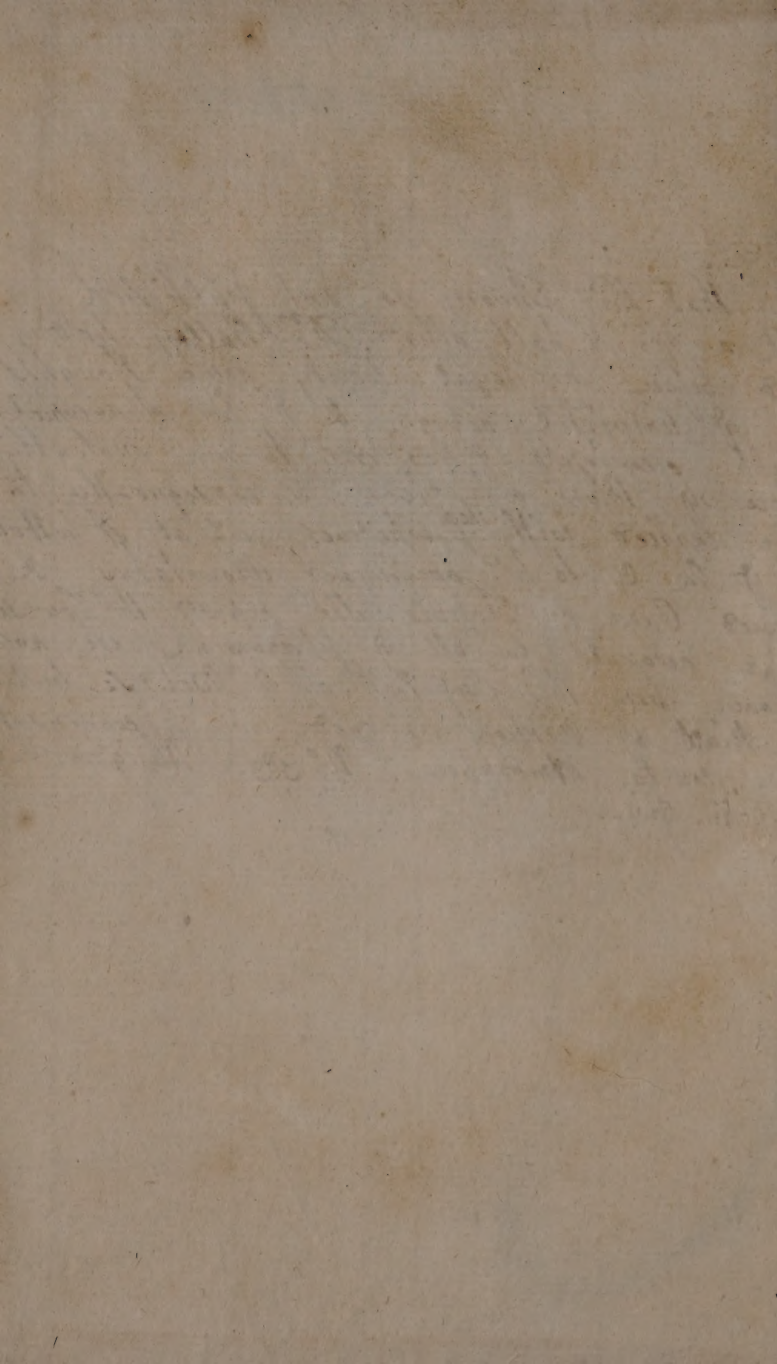
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*George Paterson of
Castle Huntly Esq^r*

Note.

That this Theory w^{as} not published till a y^r & half after, D^r Halley had laid before of Royal Society some thoughts on of universal deluge & of choc of a comet which occasioned of waters to run violently where of Blow w^{as} given & consequently to have carried with ~~th^{em}~~ whatever w^{as} at of bottom of of sea & to h^{ave} overturned Mountains & burned Trees & whatever else opposed th^e Course. It so accounts for all of phenomena we now discover from th^es Impetus of of Waters: but no kind of Mention is made of of condensatⁿ of a comets atmosphere. N^o 383, Abregem: V. vi part: ii. p 1...



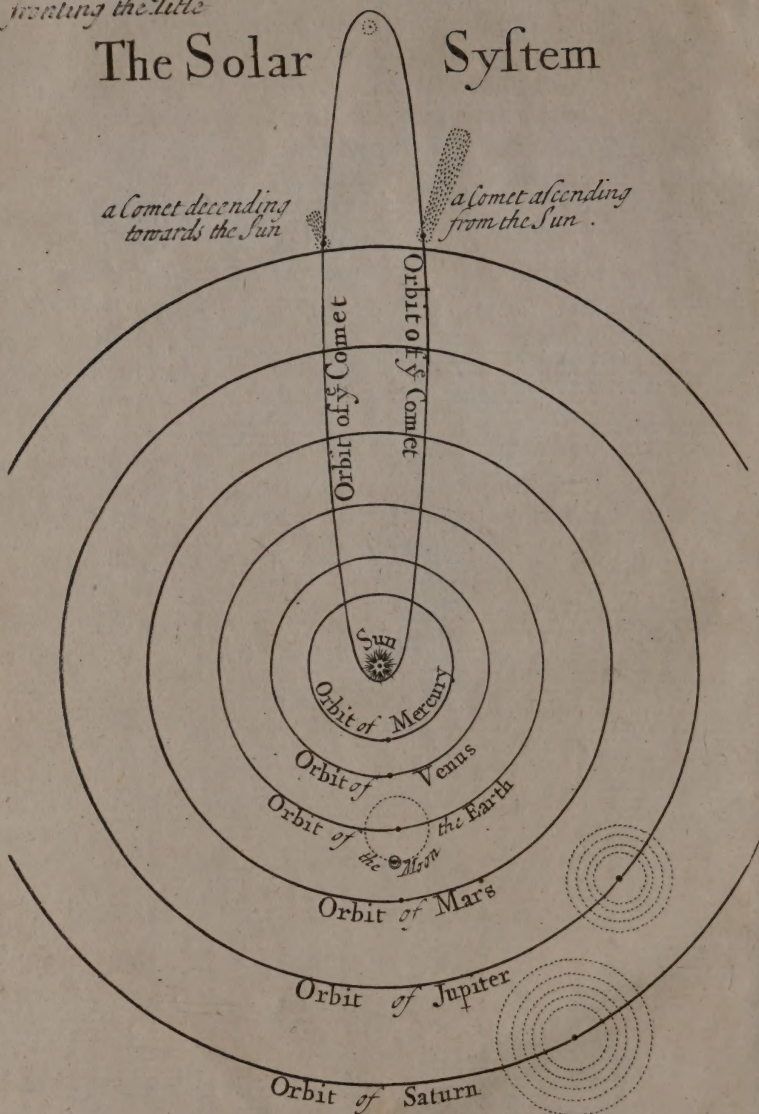
presenting the Title

The Solar

System

*a Comet descending
towards the Sun*

*a Comet ascending
from the Sun*



A NEW
T H E O R Y
O F T H E
E A R T H,
From its O R I G I N A L,
T O T H E

C O N S U M M A T I O N of all Things.
W H E R E I N
The C R E A T I O N of the W O R L D in Six Days,
The U n i v e r s a l D E L U G E,
And the G e n e r a l C O N F L A G R A T I O N,
As laid down in the Holy Scriptures,
Are shewn to be perfectly Agreeable to
R E A S O N and P H I L O S O P H Y.

With a large I N T R O D U C T I O N concerning the
genuine Nature, Style, and Extent of the *Mosaick*
History of the C R E A T I O N.

By *WILLIAM WHISTON*, M. A.
Some time Professor of the *Mathematicks* in the University
of C A M B R I D G E.

The F I F T H E D I T I O N.

To which is added,

An A P P E N D I X, containing a new T H E O R Y
of the D E L U G E.

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Fleet-street. M D C C X X V I I.

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SUMMO VIRO
ISAACO NEWTON,

Equiti Aurato,
Apud *CANTABRIGENSES* quondam
MATHESIOS PROFESSORI *LUCASIANO*
Longe Celeberrimo,

Apud *LONDINENSES*
SOCIETATIS REGALIS PRÆSIDI ORNATISSIMO,
Necnon

REGIO NUMMORUM CUSORUM MAGISTRO,
REIPUBLICÆ, quoquò patet, LITERARIÆ
ORNAMENTO.

Seculi, Gentis, Academiae

EGREGIO DECORI,

ORBIS PHILOSOPHICI

DELICIIS.

Qui REM LITERARIAM,

Praefertim MATHEMATICAM,

Eousque Excoluit, Adauxit, Dilatavit,

Ut ipsam PHYSICAM

Intra Pomœria sua complecti,

ET MUNDI SYSTEMA,

Conatu inaudito, ditioni suæ subicere

Tandem aliquando audeat.

QUEM

Morum, Candor & Modestia,

Quem sagax Animus & penetrans;

Quem assidui Labores, indefessæ Vigiliæ,

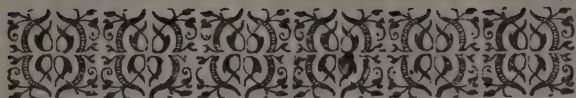
Industria incredibilis,

Promovendis veræ ac solidæ Sapientiæ studiis unice
dicata.

QUEM

Q U E M
 Rerum Divinarum Humanarumque,
 Hoc est
 U N I V E R S Æ P H I L O S O P H I Æ,
 Peritia plane singularis:
 Quem demum
 P H I L O S O P H I Æ N A T U R A L I S,
 Quin & O P T I C E S speciatim,
 Hoc est,
 Mirandorum Lucis & Colorum Phænomenorum,
 P R I N C I P I A M A T H E M A T I C A,
 Auro contra æstimanda, & mortalibus vix aut ne vix
 quidem propalanda temere,
 Ultimæ posteritati æternum commendabunt.
 Exiguum hocce
 Tentaminis Philosophici Spicilegium,
 E Messe *NEWTONIANA*
 Primitùs sublectum;
 Subfidiis, Confiliis, Auspiciis potissimum *Newtonianis*
 Acceptum,
 Uti par est, referendum ratus,
 Totum hoc, qualecunque sit,
 N E W T O N I
 Nomini,
 In omne ævum perennaturo,
 Nuncupandum;
 Et,
 In Grati Animi *Μνημόσυρον*, Consecrandum
 Censuit
 G U L I E L M U S W H I S T O N .

17 Kal. Jun.
 A. D. 1696.



A
DISCOURSE
Concerning the
Nature, Style, and Extent
OF THE
Mosaick HISTORY
OF THE
CREATION.



T being no inconsiderable Part of the ensuing Theory, to account for the Creation of the World, agreeably to the Description thereof in the Book of *Genesis*, it cannot but be very necessary in this Place, to discourse of the Nature of that Sacred History; the Style in which it is Writ, and how far it is to be Extended. The Misunderstanding of which Points has been, I think, the principal Occasion of those Perplexities and Contrarieties into which Men have run with relation to it; while some have adher'd to the common and vulgar, tho' less rational Exposition; without any Consideration of Nature, Reason, Philosophy, or just *Decorum* in the

Dr. Tho.
Burnet's
*Theory of
the Earth,
and Ar-
chaologia.*

several Parts of it: And Others, on the contrary, have been so sensible of the Wildness and Unreasonableness of *That*, that they have ventur'd to exclude it from any just Sense at all; asserting it to be a meer Popular, Parabolick, or Mythological Relation; in which the plain Letter is no more to be accounted for, or believ'd, than the fabulous Representations of *Æsop*, or at best, than the mystical Parables of our Saviour. Of what mischievous Consequence this latter is commonly esteem'd, I need not say; a late excellent Author, who thought it absolutely necessary to be introduc'd, having felt Reflections sufficiently severe, and seen Effects sufficiently mischievous of such an Interpretation: And how unworthy of God, how incoherent and absurd the former Exposition is in it self, and must be esteem'd by free and inquisitive Thinkers, 'tis not difficult to make appear to any impartial Man, and shall in this Discourse be particularly attempted. Indeed I cannot but imagine that, as those who plead for the Mythological Sense, do it only because they suppose it impossible to give a commodious and rational Scheme of it on any other Hypothesis; and therefore will easily and readily embrace any more literal Interpretation which shall agree to the Divine Attributes, the Reason of their own Minds, and the true System of the World: So I think those who, notwithstanding its apparent Incongruities, adhere to the vulgar Exposition, will have great reason to encourage, and rest satisfy'd in such an Account, as shall at once keep sufficiently close to the Letter of *Moses*, and yet be far from allowing what contradicts the Divine Wisdom, Common Reason, or Philosophick Deductions: To both which therefore, I persuade
my

my self this new Attempt ought not to be unacceptable.

But because the principal Difficulty is likely to arise from the Prejudices and Prepossessions of the latter, and from the vulgar and common Notions already fix'd in the Minds of most Men, relating to this *Mosaick* Creation; I shall in this Place chiefly have a respect to them, and endeavour to evince, That the Notions they have entertain'd of the Nature, Style, and Extent of the Creation of the World in Six Days, are false, precarious, and no less contrary to the Holy Scriptures themselves, than to sound Reason and true Philosophy. The Proposition therefore which shall be the Subject of this Dissertation, and includes the whole Point before us, shall be this: *The Mosaick Creation is not a Nice and Philosophical Account of the Origin of all Things; but an Historical and True Representation of the Formation of our single Earth out of a confus'd Chaos, and of the successive and visible Changes thereof each Day, till it became the Habitation of Mankind.*

That this Proposition is exactly agreeable to that Account, which in the following Theory is given of this Creation, will be evident upon the Perusal thereof; and that the same Proposition is alike agreeable to the Design and Style of the Sacred Penman in the first Chapter of *Genesis*, is what I am now to make appear. And that I shall endeavour to do by the following Arguments; which though they might have been distinguished, and suited to the several Branches of this Assertion, yet for Ease I shall wave that Niceness, and set them down indifferently in that Order they were put into by my own Thoughts, before I intended to adapt them to the just Form

Of the MOSAICK Creation.

of the foregoing Proposition: Strength of Reasoning, more than Exactness of Composition, being the Aim of the Author in this whole Theory: And if he be found to go upon solid Grounds, he hopes the Reader will never the less embrace the Conclusions, because of the Inaccuracy of the Style, or Harshness of the Periods; which wholly to have avoided, he freely owns, would to him have been more tedious and operose than the Work it self; and so he hopes 'twill not be expected from him by the Inquisitive Reader: Which Apology once for all he desires may be accepted, and call'd to mind whenever (as too frequently it will) there shall be Occasion in the following Pages.

I. The very first Words of *Moses* plainly imply, That the Production of all the World out of Nothing, which we usually style *Creation*, was prece-
 Gen. i. 1. *cedaneous to the Six Days Works, given an Account of in the same Chapter. In the beginning God created the heaven and the earth*, says the Scripture; which is, as I take it, a Preface or Introduction to the following Account, and may be thus paraphras'd: “ Although that History of
 “ the Origin of the World, which shall now be
 “ given you, do not extend any farther; as will
 “ appear presently, than that Earth we live upon,
 “ with those Bodies which peculiarly belong to it;
 “ and so the rest of the Universe be not at all directly concern'd therein; and although the same History will not reach to the
 “ *Creation* of the Matter, but only Production
 “ of the Form, and Disposition of the Earth it self: Yet, to prevent any Misunderstanding,
 “ and obviate any ill Effects of perfect Silence
 “ touching these Things, I am oblig'd, by the
 “ Divine

“ Divine Command, to assure you, That the
 “ Original of all Beings whatsoever, was pri-
 “ marily owing to that same God of *Israel*,
 “ whose Works I am going to relate; and that
 “ not only this Earth, with all its Bodies, but
 “ the vast Frame of Universal Nature, was by
 “ him at first created out of Nothing, and dis-
 “ pos’d into those several Systems which now
 “ are extant, and make up what, in the largest
 “ Sense, is styl’d Heaven and Earth, or the whole
 “ World.

This Sense of the Words is allow’d by our late Excellent Commentator, the Right Reverend the late Lord Bishop of *Ely*; whose Sentiments cannot but be justly valued by all who are conversant in his Expositions of the Holy Scriptures; and is, I think, not a little confirm’d by the following Words; *And the Earth was without Form and Void, and Darknes was upon the Face of the Deep, and the Spirit of God moved on the Face of the Waters.* Where ’tis clear, that as soon as the Holy Writer descends to the Description of the Chaos, and the commencing of the Six Days Creation, he mentions not a Word of any Production out of Nothing, (before suppos’d and asserted to have been past and done, *In the Beginning of Things.*) He omits and thereby seems to exclude that *Heaven*, or those Superior Systems of the World already spoken of, from any Place therein: And by the whole Coherence appears to confine the Narration following to the Earth alone, with its Dependances. *Moses* does not say, as the common Expositors do, “ That just at the Commencing of the Six Days Work, the Earth, and all the rest of the World was originally produc’d; But that, When God had (formerly) created all the World, which

Gen. i. 2.

“ is usually distinguish’d into the Heaven and
 “ the Earth, the Latter of these, (the Consideration whereof was alone pertinent to the
 “ present Design) at the Time preceding the
 “ Six Days Work, was in a Wild, Irregular,
 “ and Dark Condition; or such a perfect Chaos,
 “ as nothing but the Power of God, and his
 “ Spirit’s moving on, and influencing the same,
 “ could ever have reduc’d into a habitable
 “ World.

This is a very easy and natural Account of this Matter, and I think the most obvious and genuine Signification of the Words themselves. And were not Mens Minds too much prejudic’d with other Apprehensions, this alone might be sufficient to limit their Thoughts, and prevent their Enquiries after any *Creation of Bodies out of Nothing* in the Six Days Work; and their stretching the same beyond the Earth, either to the whole System of Things, as the most do; or indeed to the Solar System, with which others are more modestly contented in the Case. Which two Things once granted me, the Proposition we are now upon would soon be establish’d, and little farther Labour become necessary.

But that I may give all possible Satisfaction, and lay this Foundation firm, on which my Account of the *Mosaick* Creation is entirely superstructed; I shall more at large prove the same Truths: Craving the Pardon of those Readers who are already satisfy’d in these Matters, if I shall seem to them to insist too long on a plain Case; as perhaps they may (and that I think very justly) esteem this to be.

And indeed, The Prejudices of Men are here so great; their ill Opinion of Philosophical Hypotheses

potheses in these Cases so deeply rooted ; the Attempts hitherto made have been so unsuccessful, and besides, the Honour of God in his Holy Word is so much concern'd ; and the usual Expositions of this *History of the Origin of Things* are so poor, so jejune, so unbecoming the Penman, much more the primary author of the same ; that a large and full Discourse is but necessary: And tho' it should prove somewhat prolix, 'twill be, 'tis hop'd, not improper ; but as well serviceable to Religion as to Philosophy ; by rescuing this Ancient, Venerable and Sacred Account of the Origin of Things, from such false and unwary Glosses as have been, and still are put upon it ; as have rendred it, in the Opinion of too many, an uncouth and incredible System ; nay, somewhat below some of those Θεογονίας or Κοσμογονίας which the imperfect Traditions of the Heathen World enabled them to describe. To proceed therefore in the Arguments before us, I affirm,

II. That the Words here us'd of *Creating*, *Making* or *Framing* of Things, on which the main Stress is laid, in the Style of Scripture are frequently of no larger Importance than the Proposition we are upon does allow ; and signify no more than the ordering, disposing, changing, or new modelling those Creatures which existed already, into a different, and sometimes perhaps a better, and more useful State than they were in before. I do not say this is the utmost, or only Importance of these Words ; I have already allow'd, that *Creating*, in the first Words of *Genesis*, includes Producing out of Nothing ; and I add, that in our common Creed, wherein we profess our *Faith in God the Father Almighty*,

mighty, *Maker of Heaven and Earth*; the Words are, agreeably to the Extent of the Divine Power, and the Nature of that Profession, to be taken in the same large and comprehensive Sense: And the like is to be said of many other Places of the Holy Scripture. But then I observe withal, that the other more narrow and limited Sense is very common and familiar in the Holy Writings; and therefore, where the Subject-matter and Coherence require it, as I think 'twill be evident they do in the present Case, these Words both may and ought to be taken in the same limited Acceptation.

This Signification of the two latter Words *Make* and *Frame*, will, I suppose, be granted me by all; and that the same is as true of the other word *Create*, the following Texts will sufficiently evince; and from the promiscuous Use of them all, and others of a like Importance, might however be fairly suppos'd. *If*, says Num. xvi. 30. *Moses, the Lord make a new thing, or Create a Creature, and the Earth open her Mouth and swallow them up.* Where none can imagine any Thing produc'd out of Nothing; but only such an unusual and miraculous disposal of Things as would at once demonstrate God's Vengeance against the Wicked, and his absolute Command over all

Iſa. xlv. 7. *Creatures.* Thus God himself says, *I form the light and Create darkness; I make peace and Create evil; I the Lord do all these things:* Where the Objects of the Divine Creation being not real and substantial Beings, could not be capable of a proper Production out of Nothing: Which also is the Case in the Verse immediately following, *Let righteousness spring up together; I the Lord have Created it.* Thus also, says God by the same

Cap. lxxv. 17. *Prophet; I Create new Heavens and a new Earth:* which,

which, tho' the very Case before us, yet would oddly enough be expounded of an Annihilation of the World, and a Reproduction of it again. But what comes still more home to our Purpose is, that in the very History of the Creation it self, the Word *Create* as well as *Make*, is us'd in the Sense we contend for; the very same Things being ascrib'd to the Creating and Making Power of God, which are also describ'd as the regular Offspring of the Earth and Seas: *God Created* Gen. i. 21. *great Whales, and every living Creature that moveth; which the waters brought forth abundantly after their kind. And God said, Let the Earth* y 24, 25. *Bring forth the living Creature after his kind, Cattle and creeping thing, and Beast of the Earth after his kind; and it was so: And God made the Beast of the Earth after his kind, and Cattel after their kind, and every thing that creepeth upon the Earth after his kind: And God saw that it was good.*

So that since the Words made use of in the History of the Creation are there, and every where taken promiscuously; since some of them are, by the Confession of all, of no larger Importance than the Proposition before us will admit; and since, lastly, that Word, of which the greatest Doubt can arise, has been prov'd not only in other Texts of Scripture, but in the very History of which we are treating, to be of no more determinate Signification than the rest, and alike capable of the Sense we here put upon it; I think 'tis a clear Case, that if no Argument can be drawn from such Words *for*, yet neither can there justly be any *against*, that Proposition we are now upon.

III. Those synonymous Phrases, *The World*; or *the Heavens*, and *the Earth*, under which the Object

ject of the six Days Creation is comprehended every where in Scripture, do not always denote the whole System of Beings; no, nor any great and general Portion of them; but are in the Sacred Style frequently, if not mostly, to be restrain'd to the terraqueous Globe with its dependences; and consequently both *may*, and, if the subject matter require it, *ought* to be understood in such a restrained Sense, and no other: That by these Phrases the *Mosaick Creation*, or six days work is usually understood, is evident every where in Scripture, as the following Texts will easily evince: *God who made the World, and all things therein. The Divine λόγος was in the World, and the World was made by Him, and the World knew Him not.* Hence those frequent Expressions, *From the Foundation of the World, from the Beginning of the World, from the Creation of the World, and before the World was*; which, tho' capable of including more, must yet be allow'd to have generally a peculiar, nay, sometimes, a sole regard to the six days work, particularly styl'd by St. Mark, *The Beginning of the Creation which God created.* In the same manner, and with the like frequency, the other Phrase, *Heaven and Earth*, denotes the same six days work also: *Thus the Heavens and the Earth were finish'd, and all the Host of them. These are the Generations of the Heavens and of the Earth when they were created, in the day that the Lord God made the Earth and the Heavens. In six days the Lord made Heaven and Earth, the Sea, and all that in them is, and rested the seventh day*; which being so express, I shall not need to look out for any other parallel places.

And that both the *World*, and *Heaven and Earth*, signify the terraqueous Globe alone, with its

Acts xvii.
24.
John i. 10.
Mat. xiii.
35. &
xxiv. 21.
& xxv. 34.
Luke xi.
50.
John xvii.
5. 24.
Rom. i.
20.
Eph. i. 4.
Heb. iv. 3.
& ix. 26.
1 Pet. i. 20.
Apoc.
xiii. 8. &
xvii. 8.
Mark
xiii. 19.
Gen. ii. 1.
4.
Com-
mand 4.

its Air or Atmosphere, and other Appurtenances, without including the whole Universe, nay, or Solar System also, (which yet I do not deny sometimes to be comprehended therein) the following Texts will sufficiently shew. Our Lord says of the Woman who pour'd the Ointment on him, *Wheresoever this Gospel shall be preached in the whole World, there shall also this which this Woman hath done be told for a memorial of her.* His Charge and Commission to his Apostles was, *Go ye into All the World, and preach the Gospel to every Creature.* The Tempter came to Jesus, and shew'd him *All the Kingdoms of the World, and the Glory of them.* In all which places, no other than the habitable Earth can be understood: And 'tis still so frequent and natural for Men to use this manner of Speech in the same restrained Sense to this very day, that one may the less wonder at the Sacred Style in this Case. But this word, *the World*, having not so much difficulty in it, nor being so much stood upon, as those which follow, *the Heavens and the Earth*, I shall no longer insist upon it, but proceed.

Mat. xxvi.

13.

Mark xvi.

15.

Mat. iv. 8.

And here, when the *World*, as a *totum integrale*, is divided into its two contradistinct Parts, *the Heavens* and *the Earth*, it will be said, That by such a Phrase or Enumeration of the Parts of the Universe, no less can be meant than the whole World in the largest Acceptation; or, however, more must be intended than the bare Earth, which is but one Member or Branch, and so certainly less than that whole of which it is a part.

In answer whereto, I freely confess, That the *Heavens and the Earth* do not seldom denote the entire

entire Universe; an Instance of which the first words of *Genesis* have already afforded us; but that they *always* do so, I have reason to deny. As the Signification of the *Earth* is known, and capable of no Ambiguity, so 'tis quite otherwise with the word *Heaven*, which in common use, and the sacred Authors, sometimes refers to the seat of the Blessed, or, in St. *Paul's* Phrase, the *third Heaven*; sometimes to the Place of the Sun, Moon, and Stars; and otherwhiles is no farther to be extended than the Clouds, or the open *Expansum* about the Earth, where the Air, Atmosphere, Meteors, Clouds and Volatils, have their Abode. Instances of the two former Significations, were it pertinent to my present Purpose, might easily be produc'd; but that not being so, I shall wave the same, and only prove the third and last Signification, namely, That by the *Heavens* is frequently understood nothing more than the Atmosphere of the Earth, with its appendant or contained Bodies.

Thus, God made the Firmament, and divided the Waters which were under the Firmament, from the Waters which were above the Firmament; and it was so. And God called the Firmament, Heaven. Which Place is so express; and in the very History it self, which we are about also, that it ought to be of peculiar Force in the present Case.

Gen. i. 7, 8. Thus also the Builders of *Babel* said, Go to, Let us build us a City, and a Tower, whose Top may reach unto Heaven. So mention is made of Cities great and fenc'd up to Heaven. The Clouds pass by the name of the Clouds of Heaven; nay, they are by the *Psalmist*, (agreeably to the Interposition of the *Expansum*, Firmament of Heaven on the second Day of the Creation between the superior and inferior Waters) made as it were its

Gen. i. 7,
8.

Cap. xi. 4.

Deut. ix. 1.

Mat. xxiv.

30.

& xxvi.

64.

its farthest Boundaries and Limits; the Waters contain'd in them being call'd, *Waters which are* Pfal. cxlviii. 4.
above the Heavens. The very Fowls which still Mat. viii. 20. & xiii. 32.
reside nearer to the Earth, are styl'd the Fowls of Gen. i. 20.
Heaven; and were originally appointed to fly
above the Earth in the open Firmament of Hea-
ven. By all which Places 'tis evident, That the word *Heaven* is commonly so far from including the Sun or Planetary *Chorus*, (much less the fix'd Stars, with all their immense Systems) that the Moon, our attending and Neighbour Planet, is not taken in: The utmost Bounds of our *Atmosphere*, being so of this our *Heaven* also: which was the only Point which remain'd to be clear'd.

But here, before I proceed further, I must take notice of a considerable Objection, which threatens to wrest this Argument out of my Hands, and indeed to subvert the entire Foundation of the Proposition before us; and is, I freely own, the main Difficulty in this whole Matter; and 'tis this, That such a Sense of the Words, *World*, and *Heaven*, and *Earth*, as has been pleaded for, whatever may be said in other Cases, will yet by no means fit here, nor take in all the Extent of the *Mosaick* Creation; because 'tis certain, that neither the Light, by whose Revolution Night and Day are distinguish'd; nor the Sun, Moon, and Stars, which are set in that *Fir-* Gen. i. 14, 15, 17.
mament of Heaven of which *Moses* speaks, be-
 long to our *Atmosphere*, or are limited by those Boundaries, within which we confine the present History; and 'tis equally certain, that both of them pertain to the *Mosaick* Creation, and are the first and fourth Days Works therein; and by consequence, it may be said, the Subject of the six Days Creation must be the whole
 System

System of the heavenly Bodies, or at least that particular one in which the Earth is, and is styl'd the *Solar System*.

Now this Objection is in part already taken off by the Sense in which the Production and Creation of Things has been shewn to be frequently taken in the Holy Scriptures; whereby there appears to be no Necessity of believing these Bodies to have been then originally *brought into Being*, when they are first mention'd in the *Mosaick Creation*.

But because this is not meerly the chief, but only considerable Objection against the Proposition we are upon; because it seems to have been the principal Occasion of Mens Mistakes and Prejudices about this whole History; and because 'tis the single Instance wherein this entire Theory, so far as I know, seems to recede from the obvious Letter of Scripture; 'twill be but proper to give it a particular Review, and clear withal, not only this, but several other like Expressions and Passages, in the Holy Scripture.

Now, in order to the giving what Satisfaction I can in this Point; let it be consider'd, That as to the first Point, the Creation of Light on the first Day, it is not at all asserted in the History; but only that then it first appear'd in the World:

Gen. i. 3. *God said, Let there be light, and there was light.*
4, 5. *And God saw the light that it was good; and God divided the light from the darknes. And God called the light Day, and the darknes he called Night.* And, indeed, Light does not seem capable it self of *Creation out of Nothing* in a proper Sense; tho' the luminous Body from whence 'tis deriv'd be so. And accordingly St. Paul, with reference to this very Day's Work, expresses
it

it exceeding properly, when he says, that *God* at this Time commanded the light to shine out of *darkness*. Which original Commencement of the *Light* upon the Face of the Earth this first Day of the *Mosaick* Creation being not only allow'd, but particularly accounted for in the following Theory, this can be no Difficulty in the present Case. The Creation therefore of the Heavenly Bodies, the Sun, the Moon, and the Stars, is the sole remaining Difficulty in the Case before us. And that would not appear so hard, if the Translation of the Words of *Moses* were but amended, and the Verses hereto relating, read thus:

And God said, Let there be lights in the firmament of the Heaven, to divide the day from the night; and let them be for signs, and for seasons, and for days, and years; and let them be for lights in the firmament of the Heaven, to give light upon the Earth; and it was so. And God having (before) made two great lights, the greater light to rule the day, and the lesser light to rule the night; and having (before) made the stars also, God set them in the firmament of Heaven, to give light upon the Earth, &c. or, which is all one, *And God had (before) made two great lights, the greater light to rule the day, and the lesser light to rule the night; he had (before) made the stars also: and God set them in the firmament, &c.* In which Rendering, 'tis only changing the *perfectum* for the *plusquam perfectum*, and every Thing is clear and easy, and the Objection vanishes of its own accord; the Creation of the heavenly Bodies being hereby assigned to a former Time, and the Work of the fourth Day no other than the placing them in our Firmament; according as the Account hereafter to be given does require.

Now

Now to prove this a fair and just Interpretation, (to omit that the *Creation* of the Heavens and Heavenly Bodies had been related *before* the six Days Work) 'tis only necessary to observe, that the *Hebrew* Tongue having no *plusquam perfectum*, must, and does sometimes express the Sense of it by the *perfectum*; and that, accordingly, the particular Circumstances of each Place must alone determine when thereby the Time present, and when that already past and gone, is to be understood. How many Knots in the Scripture the Omission of this Observation has left unsolv'd, and which being observ'd, would be immediately untied, I shall not go about to enumerate; there being so many in the very History before us, of the Origin of the World, that I shall not go one jot farther for Instances to confirm the before-mention'd Translation; and which, on the Account of their Agreement in Place, will more forcibly

- Gen. ii. 2. plead for a like Agreement in Sense also. On the seventh day God had ended his work which he had made, and he rested on the seventh day from all his work which he had made. — He had rested from all his work which God had created and made.
- † 3. ——— The Lord God had not caused it to rain on the Earth, and there had not been a man to till the ground; but there had gone up a mist from the Earth, and had water'd the whole face of the ground; and the Lord God had formed Man out of the dust of the ground, and had breathed into his nostrils the breath of life. — And the Lord God had planted a garden eastward in Eden. —
- † 5, 6. And out of the ground had the Lord God made to grow every tree that is pleasant to the sight, and good for food. ——— And out of the ground the Lord God had formed every beast of the field,
- † 7.
- † 8.
- † 9.
- † 19.

field, and every fowl of the air. — In all which Places the whole Context is so clear'd by this rendring, and so many strange Absurdities avoided, that there is, I think, all imaginable Reason to acquiesce in it.

And tho' the fourth day's work is among those other, where no such alteration need be made; in which therefore it may seem hard to allow of a single instance against the use in the precedent and subsequent Context in the first Chapter, yet the circumstances of that day being peculiar; the like mixture of the *perfectum* and *plusquam perfectum* being in the second Chapter, and in other places of Scripture to be observ'd; and a distinct work being still hereby preserv'd to that day, the placing the Sun, Moon, and Stars in our Firmament, which otherwise is after a sort double; do all, in good measure, take away the force of such Reasoning, and conspire to allow us that Interpretation before given, and thereby to secure the Proposition before us from that grand Objection which seemed capable of causing so great an obstruction in our course. But if any should be dissatisfy'd with this Answer, I shall, for their sakes, enter deeper into this matter; and, without any assistance from what has been already said, endeavour to establish the Proposition before us, and take away the foundation of the present difficulty.

And here I observe, That the Scripture all along accommodates its self to the vulgar Apprehensions of Men, with relation to such Points of Natural Philosophy as they were not able to comprehend; and in particular, with relation to the Site, Distance, Magnitude, Use, and Motions of the Heavenly Bodies. Tho' these be really very distinct, as well as distant from the

Earth, with all its Dependances; yet are they rarely, if ever, so consider'd in the Holy Scriptures. They are all along there represented as fiery Luminaries plac'd in our Atmosphere, and as much belonging to, and depending on the Earth as the Clouds, Meteors, or other Aerial *Phænomena*: And so 'tis no wonder that in the History before us, they are included among the rest of their Fellows, and come within the verge of the *Mosaick* Creation, notwithstanding its proper limits be no larger than we here assign thereto. In order to the accounting for which things, I shall,

(1.) Shew the Truth of the Observation, in several instances from the Holy Scriptures.

(2.) Shew the rational Original and Occasion of such ways of speaking.

(3.) Explain what, according to my Notion, must be meant by the Creation or Production of these Heavenly Bodies in the *Mosaick* History before us; and prove such a Construction to be agreeable to the sacred Style in other Places.

(4.) Assign some Reasons, why, in a History of the Origin of our Earth, these remote and distant Bodies come to be taken notice of, tho' their own proper Formation did not at all belong to it.

(1.) I shall shew the truth of the Observation, in several Instances from the Holy Scriptures; namely, that the Heavenly Bodies are no otherwise there described than with relation to our Earth, and as Members and Appurtenances of our Atmosphere. And this Observation is confirm'd by the first mention that is made of them
in

in this very History we are upon; all the Circumstances whereof fully attest the truth of what is here affirm'd of them. When God said *Let* Gen. i. 3, *there be Light*, or when the *Light* first display'd 4, 5. it self, notwithstanding those numberless advantages accruing to the whole World therefrom, none are taken notice of but such as respect our Sublunary World. 'Twas entirely with regard to our *Light and Darknesh*, our *Day and Night*, that all was done, as far as can be collected from the Words of *Moses*. Thus, as soon as the Heavenly Bodies are made, tho' they be universally useful, and belong to the entire Solar System, yet are they here plac'd in the Firmament of our Heaven, (a Phrase us'd in this History for \times 14, 15, our Air only) to divide our Day from Night, to 16, 17, 18. be to us for signs and seasons, for days and years; to be for lights in the firmament of heaven to give light upon the earth; to rule over our day and night, to divide our light from darknesh. And as to the order of their Introduction, 'tis not that of their own proper Greatness or Dignity, but that of their respective Appearance and Uses here below. All which is far from a full account of the real Original, universal Intentions, and true Places of these Glorious Bodies; but on the Supposition here made use of, exactly easy and natural. Agreeably whereto, when our Air is clogg'd with gross Vapours, so as to hide or disfigure their Faces to us, *The Sun* is said to be turn'd into *Darknesh*, and the *Moon* into *Blood*; and when Acts ii. 20. some Aerial Meteors, call'd by their Names, and for a moment resembling them, shoot and drop down in the Air; *the Stars* are said to fall from Mat. xxiv. Heaven. The Sun and Moon, as if they were 29. two Globes of Fire and Light pendulous in our Air, and hanging over certain places, are order'd

Joshua x. 12. to stand still, the one upon Gibeon, the other in the Valley of Aijalon. The Sun is represented as
 Psal. xix. 4, 5, 6. set in a Tabernacle, rejoycing as a Giant to run his race. His going forth, is said to be from the end of Heaven, or the Horizon; and his circuit unto the ends of it. All which Expressions, with
 vide Psal. civ. 1, &c. many others through the whole Bible, plainly
 Isaiah xl. 22. shew, That the Scripture did not intend to teach Men Philosophy, or accommodate it self to the true and *Pythagorick* System of the World. The Holy Writers did not consider the Heavenly Bodies *absolutely*, as they are great and noble in themselves, main and glorious Parts of the Universe, very distinct from our Earth, plac'd at various and immense Distances from it, and from one another; design'd for, and subservient to very many, very wise, and very comprehensive Ends and Methods of the Divine Providence; dispos'd in a regular order, in proportionate and harmonious Periods and Revolutions, and finally endued with mighty Powers and Influences, with respect to numerous and vast Systems of Beings. Under such a consideration we might have expected another sort of Representation of the Heavenly Bodies, their Original, Designs, Courses, and Circumstances, than the foregoing Texts, or their parallels, every where afford us. But if we look on them under the Notion of Neighbour-Luminaries, which are situate at the utmost bounds of our Atmosphere, and belong, as well as the Clouds, to our Earth; which are appointed to be our peculiar Attendants, and a part of our Retinue; serve our single Necessities, and every day rise and set on purpose to provide for our Advantage and Convenience: If, I say, we thus look upon them, (as all Men not otherwise taught by

by Astronomy do and must) the Texts above-cited, and the whole current of the Holy Books will easily accord and correspond to such a System. And I dare appeal to any impartial and competent Judge, to which of the foremention'd Schemes the most obvious and easy Sense of the Expressions of Scripture hereto relating are adapted; and whether it does not usually speak as an honest and inquisitive Countryman, who no more doubted of the Heavenly Bodies, than of the Clouds appertaining to the Earth; rather than as a new Astronomer, who knew them to be vastly distant from, and to have nothing in a peculiar manner to do with the same. Which will be less wonder'd at, when we consider in the next place,

(2.) The Reason and Occasion of such ways of speaking. And here I shall not content myself in general to observe, that the design of Divine Revelation was quite of another Nature, than requir'd a nice Adjustment and Philosophick Explication of the Natural World; that the Capacities of the People could not bear any such things; that the Prophets and Holy Penmen themselves, unless over-rul'd by that Spirit which spake by them, being seldom or never Philosophers, were not capable of representing these things otherwise than they, with the Vulgar, understood them: That even, still, those who believe the true System of the World, are forc'd among the Vulgar, and in common Conversation to speak as they do, and accommodate their Expressions to the Notions and Apprehensions of the generality of Mankind: I shall not, I say, content myself with such Observations, most of which are usually, and with good reason, insisted on in the present case; but rather attempt to find out the true Origin and Source of such Notions

and Expressions, made use of, as by most other Writers, so especially by the Sacred Ones in the Holy Bible.

God has so fram'd the Eyes of Men, that when the distance of Bodies, and their proper Magnitude is very great, they shall both be imperceptible to us. There is every way from our Eye a spherical Distance or Superficies which terminates our distinct Perception of Objects; and beyond which, all Distances and Magnitudes, absolutely considered, are not by us distinguishable. The Clouds, tho' lying parallel to the Horizon, they are (so far as comes at once within our view) almost in the same Plane, yet to us they seem bent into a concave Figure, or kind of Hemispherical Superficies, almost equidistant on every Side from its Center, the Eye of the Spectator, and so seem every way to touch the Ground at a Mile or two distance from him. And this happens by reason of the Imperfection of our Sight, which distinguishing remote Objects but to a certain distance, beyond which the Clouds are, can have no other Idea of their Situation than small and like Objects at that Spherical Superficies would excite. On which Principle 'tis certain, that till Geometrick and Philosophick Principles rectify Men's Notions, all Bodies whatsoever beyond the Clouds, such as the Celestial are, must needs be esteem'd at the same equidistant Superficies with the Clouds, and appear among them, and by consequence 'twould be on this account, as possible for the Vulgar to be persuaded that the Clouds were vastly remote from, and bear no relation to this Earth, as that the Sun, Moon, and Stars were so; and to them as strange to have found no account of the Formation of them with that of the other visible World,

as the omission of the *Clouds* would have been. It being impossible that the Sun, for instance, tho' so many millions of Miles distant, should to us appear above one or two from us; and alike impossible that his bigness, tho' so many thousand Miles in Diameter, should appear to be so many Feet to us on Earth: As all who have any skill in Opticks very well know.

So that since these Heavenly Bodies are and must needs be to our Sight and Imagination at the same distance with the Clouds, and consequently, *as to us*, are with them plac'd in our own Air; since their visible Magnitude, Situation, Motion, and Habitues, are all one *with respect to us*, as if they were really light and fiery Balls rowling upon or just above the Clouds; since their apparent Changes, Figures, Colour, Countenances, Effects, and Influences would be (as far as Sense and vulgar Observation could determine) *on this Earth*, and *its Inhabitants*, the very same as were to be expected from such light and fiery Balls, revolving at the presumed distance; when all wise Men, especially the Sacred Penmen, in their Writings design'd for the Advantage and Instruction of all, condescend still to the Apprehensions and Capacities of Men, and speak of the *Being* of things as they constantly *Appear*; of which the Bible is full of Instances: All these things consider'd, 'tis not to be wonder'd at, that the Heavenly Bodies are accounted Appendages of our Earth, and agreeably thereto made mention of in the *Mosaick Creation*.

(3.) I shall explain what, according to my Notion, must be meant by the Creation or Production of these Heavenly Bodies in the History before us, and demonstrate such a Construction

to be agreeable to the sacred Style in other places. Now 'tis easy to tell what is meant by their Creation in the case before us, when it has appear'd that their Production out of nothing was precedaneous to the six days Work, and that they are wholly consider'd as belonging to our Earth, and plac'd in our Air; viz. *Their primary being so plac'd; their first becoming visible to Men on Earth, or in other words, their Original Appearing there.* I mean in plain *English*, Light is said then first to *be*, (for it being an effect of the Heavenly Bodies, not a distinct thing from them, is not by *Moses*, as I have already noted; said to be *made* or *created*,) when the superior Regions of the Chaos were become so far clear and defecate, that the Rays of the Sun in some degree could penetrate the same, enough to render a sensible Distinction between Night and Day, or that space the Sun was above, and that it was beneath the Horizon. And agreeably, the Sun, Moon, and Stars, are then said first to *be*, or to

Gen. i. 3.

1. . .

3 14, 16.

That this Exposition is agreeable to the Scripture Style, is evident by this Observation, That several things are there affirm'd to *be*, in any certain manner, when only those effects we feel are such as they would be were they so indeed; and 'tis not unusual to assert the *being* of any Cause, when all those consequences are no otherwise in the World, and with regard to Men, than they must and would be upon its real Existence, without any exacter niceness as to the truth of the same. Thus God is said several times

to *repent* of somewhat he had before done, when his future Actions are the very same as would in Human, as well as Divine Affairs, be the certain consequences of a proper Repentance: Thus also God is said to be *pleas'd* or *angry* with Men, and that in a very *passionate* and *sensible* manner, when he confers such great Mercies, or inflicts such great Judgments, as were he really so, he must naturally do. Thus also *Eyes* and *Ears* are frequently suppos'd of God, because he as certainly is conscious of all the Actions and Speeches of Men, as if he really saw and heard the same. In a different instance, The Sun is said to *stand still* or *move*, tho' in propriety of Speech, as is now well known, those affections ought to be ascrib'd to the Earth, because every thing, as to sensible appearance, is in the same condition as from the Annual and Diurnal Motions of the Sun, were they real, must, and would obtain. The Sun is said to be *turn'd into Darknes*, and the Moon *into Blood*, as was just now observ'd, when, without any alteration in themselves, they appear of a dark or bloody Countenance to the Inhabitants of the Earth. Nay, which is most of all to our present purpose, God is then said to *make all things new*, Apoc. **xx.** and to *create a new Heaven, and a new Earth*, 5. when, at the utmost, he so changes the Constitution and State of our Earth, as to render thereby this whole Sublunary World very different from, and much excelling that which formerly appear'd. In all which, and innumerable other Instances, 'tis plain and evident, that the Holy Writers do not consider merely how things are in themselves, but how they are *to us*; not what is their proper *nature*, but visible *appearance* in the World. 17.

But here, lest this Doctrine should be abus'd,
I must

I must interpose this necessary caution, That such a liberty is neither by other Authors, nor the sacred Penmen taken on all occasions, or in every case; but peculiarly when the sublimity of the Matter, the capacities of the People, the more easy instilling useful Principles into Men, or some other weighty reason, requires such an accommodation. 'Tis chiefly with regard to the Spiritual Nature, and sublime way of operation in God; or such Physical and Philosophick Truths, as relate to distant, invisible, or inaccessible bodies; the absolute Essences or Affections whereof, were not explicable to the vulgar in a plain and natural manner. In which cases this Liberty in the Interpretation of Scripture is, with the greatest Justice to be allow'd. But 'twere thence very unreasonable to extend it to all others, or indeed to any, where the same, or as good Reasons were not assignable. He who should argue, that because the Literal sense of Scripture about the Corporeal Members, and Human Passions of the Divine Nature, is not to be strictly urg'd; that therefore when he is call'd a *Spirit*, and represented as the Rewarder of Good, and the Punisher of Bad Men, those Expressions are no more to be depended on; or he who should infer, that because the First and Fourth Days Work, the Origin of Light, and the making of the Heavenly Bodies, must not be strictly literal, that therefore neither in the *Mosaick* Creation, ought the other four to be any more esteemed so; he, I say, that should thus argue or infer, would be very unfair and unreasonable; because he would assert that in one case, without ground, which on peculiar and weighty ones alone was allow'd in another. Thus those things that are ascrib'd to God,

which

which evidently agree to his Nature and Idea, are sure to be literally understood; tho' the other which are repugnant thereto be not: And in like manner, 'tis but just to believe, that so much of the *Mosaick* Creation, as related directly to the Earth and its appurtenances, and so came at once within the comprehension of the History, and of the capacities of the Readers, ought literally to be interpreted; tho' some things extraneous to the formation of the Earth, and beyond the notice of the People, be to be taken in a different acceptation. Tho' the common use of Tropes and Figures make our Speech very often not to be *literal*, yet generally we can understand one another very well without danger of deception, or of turning plain Sentences into Allegorical Discourses, in our Conversation one with another.

And 'tis evident that the Holy Books ought not to be tormented or eluded, as to their obvious sense, on every occasion, under pretence that some particular Texts are to be construed another way. That SACRED RULE ought for ever RELIGIOUSLY to be observ'd, *That we never forsake the plain, obvious, easy and natural sense, unless where the nature of the thing it self, parallel places, or evident reason, afford a solid and sufficient ground for so doing.*

Now this being presuppos'd, I shall leave it to the impartial Reader to judge, after the perusal of this whole discourse, whether I have not substantial reasons for the present Exposition; and whether therefore, any one ought to blame my receding from the Letter in this single Case, or imagine that I give a just handle thereby to others, to Allegorize away this History of the Creation, or any other parts of Scripture.

And

And I must here own and profess, That tho' I think, in case the common Translation be receiv'd, there is an absolute necessity of receding from the Letter in the point before us, and that this Venerable and Sacred *κοσμοποιία*, or History of the Creation, is otherwise in the highest degree strange and unaccountable to the free Reason of Mankind; yet I am fully of opinion, that generally the difficulties occurring in the Sacred Books are to be clear'd, not by a greater receding from, but a closer adhering to the obvious and most natural Interpretation of the Periods therein contain'd: And that, the general nature of the Scripture Style every where duly observ'd and consider'd, several great scruples with relation to the Actions and Providence of God, and other things contain'd in those Books, would be taken away, if we might be allow'd to recede a little from the receiv'd opinions of Men, and Placits of Systematical Authors; on no other condition than that, for a recompence, we keep so much the closer to the Oracles of God, and the obvious and literal Interpretation of them; and explain the Bible no otherwise than the plain words themselves would appear most naturally to intend to any disinterested and unconcern'd Person: Of which many Instances might easily be given, were this a proper place for it. But I must leave this digression, and return to what I before propos'd in the

(4.) Last place, *viz.* To assign some Reasons why in a History of the Origin of our Earth, these remote and distant Bodies come to be taken notice of, tho' their own proper formation did not at all belong to it. Now though many might easily be alledg'd for this procedure, yet I shall include the main I intend here to insist on in the two following:

(1.) The

(1.) The Advantage of the *Jews*, or securing them from the Adoration of the Host of Heaven, could not otherwise have been provided for. Now as the foundation of such Idolatry is taken away by their being included in this History, which imply'd them to be such dependent and created Beings, as could have no influence of *their own*, but what were deriv'd from *God*; and consequently were subject to his Disposal and Government; which affirm'd them to be by *Him* plac'd in the Firmament, and there subjected to such Motions, Rules, and Laws, by which they became advantageous and serviceable to the World: So had they been taken no notice of, they would have seem'd exempted Bodies, and when all Worship of Terrestrial things was demonstrated by this account of their original, to be foolish and absurd, that of the *Celestial Bodies* would seem thereby to be permitted at least, if not patroniz'd and recommended to 'em.

For since, as we have before observ'd, 'twas impossible for the *Jews* to know the real state of the case, and to apprehend that they were vastly remote from, and so no way belonging to this Earth, or its Formation; there was no other way to apply a fitting remedy to that prevailing custom of worshipping the Host of Heaven (so particularly caution'd by *Moses*) but to condescend to the Capacities of the People, and supposing them light and fiery Globes pendulous in the Air, and revolving just beyond or among the Clouds, as they appear'd to them to do, to recount their *respective*, as well as the *real* Formation of the other parts of the visible World; and assign them their proper place and distinct period in the Six days work, as well as any other

Deut. iv.
19. & xvii.

other more directly concern'd therein. The Sun, Moon and Stars, were such noble and glorious Bodies, and so visible, so remarkable, so useful parts of the World; and the Heathen Nations so generally doted on the Worship of them, that had they been entirely omitted in this particular account of the Origin of things, there would have been the most eminent danger of this kind of Idolatry among the *Jews*; and the seeming approbation of that practice, to which they were so prone before, from the silence of their great Lawgiver in his Creation of the World, might probably have defy'd all dissuasions, and been the most fatal encouragement to so vile a Worship that were easy to be imagin'd. Any particular declaration of the reasons of such omission, from the real Distance, Magnitude, Motions, and Designs of the said Bodies, and how improperly they could be reduc'd within the said narration (the only precaution supposable in the case) being more likely to discredit the whole Book, than overcome their prejudices; than give them a true and just Idea of the matter it self, and so obviate their false reasonings and practices thereupon in the foremention'd Idolatry. So that 'twas absolutely necessary to include the Heavenly Bodies in the *Mosaick* Creation, in order to prevent Idolatry among the *Jews*: which seems to have been a principal aim not only of recording this whole Narration, but of the entire *Mosaick* Dispensation; and therefore was in the first place by all means to be consider'd and provided for.

(2.) The peculiar Nature and Circumstances of this History of the Creation, necessarily require the mention of the Heavenly Bodies, as well as of any other parts of the Visible World. And

'tis this mistake that has hitherto hindred any rational account thereof; that Men have either suppos'd it a real and philosophical relation of the proper Creation of all things; or a meer mythological and mysterious Reduction of the visible part of it to six periods or divisions, under which mighty Mysteries were suppos'd to be hid, and by which the foundation of a seventh-day Sabbath was to be laid among the *Jews*. Now tho' somewhat of truth may possibly be contained in each of these different notions; yet I think 'tis undeniable, that they are neither of them to be acquiesced in, and by no means give a satisfactory account of the compleat Nature and Kind of this History. That alone to which all its particulars exactly answer, and which is as literal and philosophical as the capacities of the *Jews* could expect or reach, and did require, is, *An Historical Journal or Diary of the Mutations of the Chaos, and of the visible Works of each Day, such an one as an honest and observing Spectator on the Earth would have made, and recorded, nay and believ'd to be in all cases the truth and the reality of the things themselves.* Now that this Idea alone fits this sacred History, might easily be made out by the consideration of the particulars related, and of those omitted, with all the other circumstances thereof, by no means corresponding to any other Hypothesis; but most exactly to this before us; without the least force offer'd to the Nature and System of the World, to the divine Perfections, or the free Reason of Mankind; and exactly suitable to the Style of the Holy Books, in the mention of the *Phænomena* of the Natural World in other places. For as to that Objection against this Nature of the Hexameron, That it cannot be that of *An Historical Journal,*

nal, such as a Spectator on the Earth would have made; because 'tis suppos'd there was then no such Spectator in being to make it; I shall answer in the words of my Reply formerly made to it, that this Argument is, I think, neither conclusive nor true. For tho' there were no real Spectator at first, yet the nature of the History might, for good reasons, be such as I assign notwithstanding. But to speak my mind freely, I believe that the Messias was there actually present; That He made the Journal; That He deliver'd it after to Moses on Mount Sinai; and that from thence it appears in the front of his Pentateuch at this Day. Which Journal being suppos'd, (and by that time this Dissertation is consider'd throughout, I hope 'twill appear no precarious supposition) 'tis evident that both the appearance of Light, and of the Bodies themselves, the Sun, Moon and Stars, (the things we are now enquiring about) must as certainly come within its limits, and make as remarkable Turns and Changes in the World, as far as a Spectator could judge, as any other within the entire six days could possibly do. The appearance of Light to him who never before is suppos'd to have seen such a thing, and must have been till then compass'd with the thickest Darknefs; and the plain view of the Heavenly Bodies themselves to him who before had no manner of notion of 'em, especially when he had no natural means of distinguishing them from Light and fiery Balls, situate just above, and pertaining to the Clouds; must as certainly have inferr'd a new Creation, and under such a notion have been recorded in their due place in the Journal before-mention'd, as any other whatsoever; and their order, position, and uses would naturally be re-
counted

counted no otherwife than we now find them in the *Mosaick* Creation. From which Consideration I think 'tis not at all surprizing, that these Parts of the visible World, how remote and separate soever they be from our Earth in themselves, are yet included in this History before us; and have their distinct Periods in the six Days Work; tho' at the same time the *Κοσμοποιία* it self doth properly relate to the formation of the sublunary World only.

IV. I prove that the History before us, extends not beyond the Earth and its Appendages, because that confused Mass, or rude Heap of heterogeneous Matter, which we call the *Chaos*, whence all the several Parts were deriv'd, extended no further. It will here, I suppose, be allow'd me, that the ancient *Chaos*, so famous among the old Philosophers, and so evidently refer'd to by *Moses*, was the entire and single Source or Promptuary of the six Days Productions; and that consequently nothing ought to be esteem'd a Part of that *Creation*, but what, in its Rudiments and Principles was so of the *Chaos* also; and this *Postulatum* is so agreeable to *Moses*, as well as to all the ancient Accounts of the *Chaos*, and I think so suitable to the Sentiments of most Men, that I shall, without farther Proof, suppose it granted me, and betake my self immediately to the other Branch of the Argument, and endeavour to evince, that the *Chaos* was so far from comprehending the entire Matter of the Universe, nay, or of the Solar System, that it reach'd not so far as the Moon, nor indeed any farther than that Terraqueous Globe we now inhabit, with such Bodies as are immediately contiguous and appertaining thereto. Which I think the following

lowing Arguments will sufficiently demonstrate.

(1.) If we appeal to external Nature, and enquire what confused Masses or *Chaos's* either at present are, or ever, within the Annals of Time, were extant in the visible World, we shall discover no Footsteps of any such Thing, excepting what the *Atmosphere of a Comet* affords us. If therefore, without the allowance of precarious and fanciful Hypotheses, relying on no known *Phænomena* of Nature, a Comet's Atmosphere be the sole Pretender; if moreover the same Atmosphere gives a Just, Adequate, Primitive, and Scriptural Idea of that ancient *Chaos*; if it answers its particular *Phænomena*, recounted by sacred or prophane History; if it prove a peculiarly fit Foundation of such an Earth as ours is, and is extraordinarily adapted to suit, and account for its present and past *Phænomena*; all which shall be prov'd hereafter; I think we may cease our farther Enquiries, and with the highest reason and justice conclude, That a Comet, or more peculiarly the Atmosphere thereof, was that very *Chaos* from whence that World arose, whose Original is related in the *Mosaick* History: And with equal Reason and Justice be satisfy'd, (which is but a certain consequent thereof) that not the innumerable Systems of the fix'd Stars, nor the narrower System of the Sun, nay, nor the Moon her self, but our Earth alone, was the proper Subject of the *Mosaick* Creation, Which Conclusion will be farther established by the coincidence of the several Days Works recounted by *Moses*, with those natural and orderly Mutations which, in the Digestion and Formation of a Planet from a Comet's Atmosphere, would mechanically proceed therefrom, as hereafter will appear.

Vid. Hypoth. 1.

(2.) The

(2.) The *Chaos* mention'd by *Moses* is by him expressly call'd *The Earth*, in contradistinction to *The Heavens*, or the other Systems of the Universe; and all its Parts taken notice of in the sacred History, appear, by the following Series of the Scripture, to belong to our Earth, and no other. The Words of *Moses* are, *In the* Gen. i. *Beginning God created the Heaven and the Earth; 1, 2. and the Earth was without Form and void, and Darknefs was upon the Face of the Deep; and the Spirit of God moved upon the Face of the Waters.* Where I think 'tis plain, as has been already observ'd, that when the Author comes to the *Chaos* or Foundation of the six Days Work, he excludes the Heavens from any share therein, and calls the *Chaos* it self, *An Earth without form and void, with Darknefs upon the Face of its Abyfs; and this all ought to grant: These being the very Words from which 'tis concluded that the Hea-then Chaos was no other than what Moses deriv'd the World from.*

And that the *Chaos* is here confin'd to the *Earth*, will sure appear more credible by the latter branch of this Argument, which observes no other Parts to be mention'd belonging thereto, than such as the succeeding Series of the Holy Scriptures, as well as the known *Phænomena* of Nature shew to have afterward belong'd to our Earth and no other, viz. an *Abyfs* or Deep, and *Waters*: both of them frequently mention'd in the Holy Books, and now actual Parts of the present Globe, as will appear hereafter.

So that since *Moses* calls his *Chaos* expressly the *Earth*; since by the coherence of his Discourse he excludes the *Heavens*, taken in a large and proper Sense, from the same; since, lastly, he mentions no other Parts of this *Chaos* than such

as afterward, and at this Day, are Parts of our Earth; 'tis somewhat unaccountable, and like a kind of fate upon Commentators, that they should unanimously resolve to make this *Chaos* of so extravagant a compass as they too incongruously do; and that they should agree in it so universally, tho' without any warrant from, nay, contrary to, the obvious sense of the Text it self, and the plain drift, coherence and description of *Moses* therein. I know it will be said, the first and fourth Days Works, (the Origin of Light, and of the Sun, Moon and Stars) necessitated such a supposition, and gave just cause for the common Exposition. Which as I believe to have been the true occasions of all such mistaken Glosses, so I think them far from just and necessary ones; and if what has been already said has clear'd those difficulties, there can be no reason to reject the cogency of the present Argument, but a great deal to rest satisfied in it; and to confess it no less unscriptural, than 'tis absurd, to expect from this single *Chaos*, a Sun, Moon, and Systems of fix'd Stars, as hitherto the World has commonly done.

(3.) The *Mosaick* and ancient *Chaos* could not include the Sun or fix'd Stars, because just before the extraction of Light from it, as 'tis usually explain'd, it was dark and caliginous; which on such a supposition is not conceivable. A strange Darkness this! where more than ninety nine Parts of an Hundred (whether we take in the entire System of the World, or the Solar System only) appear to be fiery Corpuscles, and the very same from whence all the fix'd Stars, or at least the Sun, were constituted; and are now the Fountain of all that Light and Heat which the World has ever since enjoy'd. Let every un-

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Vid. Lem.
36. *infra*.

biass'd Person judge, how dark that *Chaos* could be, where the opaque and obscure Parts were so perfectly inconsiderable, in comparison of the light, the active, and the fiery ones. So that on this Hypothesis, the state of the *Chaos* must have been exceeding light, hot, and fiery, before the first Day's Work; when it was on the contrary, according to all Antiquity, sacred and profane, dark and caliginous. 'Tis true, upon the separation of the Particles of Light, (the business, in this Hypothesis, of the first Day) the *Chaos* would become obscure and dark enough, at the same time that the Sun, or fix'd Stars, were collecting their Masses so lately extracted, and were growing splendid and glorious. But this is to contradict the History, according to which the Light, on the first Day, is consider'd with relation to the *Chaos*, and its distinguishing Night and Day *There*; not as it was collecting into Bodies of Light without it, (which rather must belong to the fourth Day's Work;) when by this Account 'tis evident, that this Day is the peculiar time for the most pitchy Darknes possible; for when all the Light was just separated from the *Chaos*, the most caliginous Night must certainly ensue. So that unless we can change the Order in *Moses*, and prove that the *Chaos* before the first Day's Work was all over Light, and on the first Day cover'd with the thickest Darknes, we in vain pretend to justify the vulgar opinion, and include the Sun or fix'd Stars among the other Matter of the *Chaos*.

Besides, since Heat is the main instrument of Nature, in all its separations of Parts, and productions of Bodies, 'tis sure a very improper season just then to extract the light and fiery Corpuscles out of the *Chaos*, when the Formation

of Things began, and there was the principal occasion for their presence and efficacy, that ever was, or could possibly be. A strange method of Generation! To take away the cause at the very instant when it was to produce its effects; and to recount the effects not before, but as soon as ever the cause is taken away! But to proceed.

(4.) The now undoubted property of the universal Gravitation of Matter, contradicts and overthrows this fancy of the heavenly Bodies having been originally included in, and at the Creation extracted from the *Chaos* of which we are speaking. For on this Hypothesis, in case they once were mingled with the Parts of the Earth, since they are now at immense Distances from it, they must have fled off every way from their former Place, and in a small Space of time have thrown themselves to those vastly remote Seats which they have ever since possess'd. Now if instead of the *vis centripeta*, a *vis centrifuga*; instead of mutual attraction, a mutual repulse or avoidance were found to be the standing unchang'd Law of Nature, and Property of Matter, this might have look'd like a possible, at least, if not a probable Hypothesis; and the whole Order of Nature ever since need not have been contradicted in this primary Formation of things. But since the contrary force, that I mean of mutual Tendency, Attraction, or Gravitation obtains, and that, as far as we have any means of knowing, universally, which Sir *Isaac Newton* has demonstrated, there is no room or foundation in Nature for such an imagination.

'Tis by no means impossible, that all the Bodies in the Universe should approach to one another, and at last unite in the common Centre of Gravity

Gravity of the entire System: nay, from the Vid. Corol. 1, & 2. Lem. xi. infra. universality of the Law of Gravitation, and the finiteness of the World, in length of time, except a miraculous Power interpose and prevent it, it must really happen. But by what Law of Nature, or Property of Bodies, they, when once conjoin'd, (as those I now oppose must affirm) should be separated, 'tis hard to conceive.

Which difficulty is increas'd by the prodigious velocity of their Motions; since, according to the vulgar Hypothesis, but a few Hours can be allow'd the Heavenly Bodies to waft them to those immensely, yet variously distant Seats, which they were immediately and for ever after to possess. All which harsh and ungrounded fictions are entirely avoided, and all things represented according to the known Laws of Matter and Motion, in that natural and easy Hypothesis we take; and which therefore is as consonant to, as the other is averse from the Make and Constitution of the Natural World.

(5.) This fancy, that the Heavenly Bodies proceeded originally from the Terrestrial *Chaos*, and cast themselves off from it every way, supposes the Earth to be the Centre of the World, or of all that System of Bodies; and they plac'd in a kind of Circumference every way about it. How well soever such a Notion would agree with the Vulgar or *Ptolemaick* System of the World, I fear the *Pythagorean*, which has forc'd its reception, and is universally receiv'd by Astronomers, will not at all square therewith. In that Account which would only include the Planetary or Solar System within the six Days Creation, the Sun, its known and undoubted Centre, seems the only proper Place for such a *Chaos* as were to be the common source and promptuary of

the whole: but in the vulgar Account, where all the fix'd Stars and Planets of the Universe are to be suppos'd at a Centre together, we, who know not the Bounds and Circumference of the World, cannot be suppos'd able to pitch upon a Centre proper for so immense and strange a *Chaos*. Only one may venture to say, that the Earth, a small moveable Planet, revolving about the Sun, is an ill-chosen one however.

And now upon a recollection and view of this whole Argument, I do not question but an unprejudic'd person, who knew nothing of the sentiments of Commentators, or of the opinions of the Vulgar; and who had only been conversant in the Works and Word of God, the Book of external Nature, and the Book of Scripture, would easily find the bounds of the *Mosaick Creation*; and on a little consideration and comparison of the sacred and prophane Accounts of the primitive *Chaos*, with the present Nature and Situation of the Heavenly Bodies, would quickly be convinc'd that our Earth alone were therein concern'd; he could scarce be suppos'd once to dream that the origin of the Sun and Planets, much less of innumerable Suns and Planets, and of the entire Universe, was there accounted for. Such notions, how general soever, are not the result of Nature and Scripture carefully consider'd and compar'd one with another, but the effects of ignorance of the Frame of the World, and of the Style of Scripture; of an unacquaintance with the *Works*, and thence an inability of judging concerning the *Word of God* relating to them; or indeed commonly of a certain *μικροδυσχία*, or Narrowness of Soul, which Temper, Education, Conversation, Application to some particular Studies and Authors, with a strangeness

ness to free and generous Enquiries, some or all have been the unhappy occasion of. In short, 'tis because Men are not able to give themselves or others a satisfactory Account of such things, that they are forced to fall into a beaten Path, and content themselves with those poor and jejune Schemes, which, when carefully examin'd, prove neither Rational nor Scriptural, but are as perfectly contradictory to sound Philosophy, as they are to the genuine Sense of those very Texts on which they build their Conclusions. Every unbiass'd Mind would easily allow, that like Effects had like Causes; and that the Bodies of the same general Nature, Uses, and Motions, were to be deriv'd from the same Originals; and consequently, that the Sun and the fixed Stars had *one*, as the Earth, and the other Planets *another* sort of Formation. If therefore any free Considerer found that one of the latter sort, that Planet which we inhabit, was deriv'd from a *Chaos*; by a parity of Reason he would suppose, every one of the other to be so deriv'd also; I mean each from its particular *Chaos*.

Nay, truly, I might carry this matter still higher, and if one Planet must be made Parent to another, justly claim the principal Place for *Jupiter*, probably above 200 times as big as our Earth, and the largest and most considerable of all the Sun's *Chorus*; and so with greater shew of probability assert, that from its *Chaos*, any of the other Planets were deriv'd, than it self from theirs. Particularly the Earth is so small a Globe, that in point of Dignity or Origination, very many of the Celestial Bodies may most fairly claim the Precedence of it, and curb its aspiring pretensions to any such mighty Prerogatives above its fellows. There is in reality no occasion
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for any such childish Reasoning on either side; and every one of the Planets (especially the Moon, so exactly resembling her Sister Earth) ought to be deduc'd from a distinct *Chaos* of its own, as well as that particular one which Providence has allotted for the Seat of Mankind. And 'tis not to be question'd, were we as well acquainted with the Nature, Constitution, and Uses of the other Planets, with their various Inhabitants, and the several Methods of Divine Providence relating to 'em all as we are with our own, we should not be backward to allow 'em every one a proportionable share in the care of Heaven, and a like conduct in their Origins and Periods, as the Earth, on which we dwell, can boast of. We should, 'tis probable, soon understand, that, (bating the stupendous and miraculous Dispensation of the Gospel by the *Messias* Θεάνθρωπος) as well the Moral, as the Natural Histories of these Worlds; those of their first Rise out of *Chaos's*, of their several Changes, Revolutions and Catastrophes, with regard to the inanimate, the animate, and reasonable Beings, both as to the Dignity of the things themselves, and their Newness to us, would equally deserve the View and Consideration of inquisitive Minds, with any like Accounts relating to our own Earth; and we should easily satisfy our selves, that that single *Chaos* of which we now speak, the Seminary of our present Earth, was so far from extending it self to the Sun, or fix'd Stars, that not the least secondary Planet in the Solar System could be contain'd therein.

V. The *Mosaick* Creation is confin'd to our Earth, with its Appurtenances, because otherwise the Time of the Creation of each Body was
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so extremely disproportionate to the Work it self, as is perfectly irreconcilable to the Divine Wisdom of its Creator, and to the Accounts of the Works themselves as they are set down by *Moses*.

In order to the *Reader's* perceiving and admitting the Force of this, and some following Arguments, I must premise some things touching the Nature of such Reasonings, and how far they may be made use of without any just Imputation of Boldness, Irreverence, or presumptuous Stinting and Determining the Divine Actions.

And here I freely confess, That 'tis not necessary in all Cases that we should comprehend the Reasons of the Divine Actions or Providence before we can be under an Obligation to believe them. They may be hid from us on several Accounts, tho' the things themselves be plain in Scripture. Under which Circumstances, I heartily own the strictest Obligation to yield our unfeigned Assent to what God has clearly reveal'd, notwithstanding we cannot see the entire Accountableness thereof to our imperfect Understandings. But then, 'tis one thing to be *above*, and another to be *repugnant* to our Reason; 'tis one thing to be *beyond* the Comprehension of, and another directly *contradictory* to our Human Faculties. Besides, the Clearness or Obscurity of the Revelation is here very considerable: the former Case resolves our Assent into the Divine Veracity; but the latter may only be the Mistakes of Human Deductions; and by consequence, tho' our fallible Reasonings be superseded by the first, yet there is room for them in the second. I believe, for instance, and am oblig'd so to do, that our Saviour Christ is truly Θεάνθρωπος, God and Man, because I find it every where plain and
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evident that the Style, Titles, Attributes, Actions ascrib'd to the Son through the whole Bible, and all Christian Antiquity, demonstrate him to be the very next Being to the Supreme God, and quite superior to all subordinate Creatures; or to be *God the Word*, who was incarnate for the Salvation of Men; tho' it may be I am not able to give a clear Account of every thing relating to his Person or Incarnation. But I do not think my self equally oblig'd to believe the Doctrine of absolute and uncondition'd Reprobation, because the Proofs alledg'd for it are far from being clear, and because 'tis not so properly *above*, as *contradictory* to the most evident Reason. And this comes nearest to the present Case; in which, neither can any one justly assert the Plainness of the Revelation on the side of the common Scheme, nor alledge the Sublimity of the Subject, on account whereof it might be fairly suppos'd above the reach of our finite Capacities. The Scripture, as I take it, is evidently for, at least must be own'd not evidently against this restrained Sense of the *Mosaick* History before us; and the Subject it self is finite and limited, and so within our ken, and capable of our Comprehension: on which Accounts such Arguments as follow ought to have their Place, and if considerable, their Force and Influence on our Faith also, and go a great way to determine such a Dispute as we are now upon.

And 'tis sure not impossible, within certain Bounds, for a considering Man to determine what is rational, wise and prudent; what is consonant to the Nature of things; what is suitable to Forecast and Contrivance; what is, in most cases, proper, decent and becoming, even with relation to the Divine Operations in the World.

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We naturally, in the reflecting on the System of external Nature, observe many Marks and Tokens of the Wisdom and Art, the Skill and Artifice of the Great Creator; which supposes that we are in good measure competent Judges in such Matters. And indeed, 'tis but changing the Scene, and considering what we naturally pronounce to be rational and orderly, fit and proportionable among Men; what will become a wise General or Statesman, a skilful Builder and Architect, nay, an ordinary Workman or Artificer, in usual and obvious Cases: What on the one hand are the Tokens of Foresight and Prudence; and on the other, of Heedlessness and Folly, in the common Affairs of Life; and we shall not wholly be to seek what to think of several analogous Actions relating to God himself: due Allowance being every where made for that infinite Distance, and different State and Management of the Supreme Governor of the World, from those of all finite Beings, depending on, and subject to him. Thus we collect our Ideas of the Divine Attributes, by considering what is good, great, valued and esteemed, lovely and venerable among Men, and ascribing every such thing to the Divine Nature; who being the Origin of them all, must contain them within himself in a higher and more eminent manner. By accumulating all Things that appear Perfections in Men, or other Creatures, and removing all Imperfections necessarily adhering to them, we arrive at the Notion of an Infinitely Perfect Being; which is but another Name for *God*; and whom, on that account, we justly think the proper Object of our Worship and Adoration.

Since therefore our very Ideas of the Divine Properties are owing to, and depend on, our Consideration

sideration of those lesser degrees of the same which we observe in Men; and since the reason why the contrary Properties are not by us ascribed to him, is, because we find that in Men they argue Imperfection: What is a Sign or Effect of some degree of Perfection in Men, must also be acknowledg'd a Sign or Effect of a like Perfection in God. And what is a Sign or Effect of Imperfection in Men, must also be own'd, if it were supposable, a Sign or Effect of a like Imperfection in God. Thus, for instance, we certainly gather, that God cannot be properly pleas'd or delighted in the Misery and Torment of his Creatures, where yet the Justice and Wisdom of his Government may require him severely to punish 'em; because we cannot but esteem it an odious Vice, and base Imperfection in a Judge on Earth, in like Cases, to be so affected; and whether we will or no, we look upon it as an Instance of Cruelty and Barbarity of Disposition to relish and taste a Sweetness, in the Cries and Groans of condemned and dying Malefactors. In like manner we justly conclude, God cannot *Impose* on innocent Creatures, no not by such Wiles, Stratagems, or other Methods of Collusion, wherein yet direct and downright Falshood were avoided; because we find a spontaneous Aversion and Indignation arises in our Minds, when such Tricks and Shams are discover'd among Men. And by the same way, and equal force of Reasoning, we may collect, that God cannot, in the Formation or Disposition of Things, no more than in other Cases, act absurdly or disagreeably to Reason; disproportionately or unsuitably to the Nature of Things; immethodically without Rule and Order, or foolishly without Drift and Design, according as an impartial and considering Man, who were duly acquainted

acquainted with the System of Nature, would judge and determine in the Case. And consequently, 'tis a dishonourable Reflection on God, to ascribe to him those things which to the free Faculties of Mankind would amongst us be look'd on as Marks of Unskilfulness, Imprudence, or Folly, in parallel Cases; and for which meer Men could not escape the most severe and indecorous Imputations.

Put the Case that I should chance to observe a certain Master-builder in his parcelling out the several distinct Tasks of the Under-workmen, and apportioning the Time he would allow to the finishing of the whole; and that I perceiv'd 9 Parts of 10 were to be done in one Day, but the other single Part had a Month's Space assign'd to it; and yet 9 Parts of 10 of the entire Number of Workmen were to club together for that Work to be done in the Month, while only every tenth Man were permitted to assist at the Day's Task: Were it possible to suppose such a Case on Earth, I need not inform you what Opinion the Spectator would have of the Abilities or Prudence of the Architect. Or, Put the Case, that an ordinary Husbandman, who had two Plots of Ground, the one of a score Feet in Circumference, not very promising or capable of Cultivation above others, the other of a thousand Acres of good Land, and very fit for Tillage or Improvement; should spend four or five Days every Week about his little spot of indifferent Ground, and allot no more than the remaining one or two for the Care and Management of the other spacious Field: 'tis easy to imagine under what Notion and Character the Plowman would pass in the World. Or lastly, Suppose one should light upon an Historian, who undertook

took to give a compleat and full Account of some large and spacious Country, with the many noble Kingdoms, Principalities, Lordships, and Governments therein contain'd; and upon Perusal, nothing was to be found mention'd in any particular manner, but a certain little and remote Island (so inconsiderable, that the generality of the Inhabitants of the Main Land never heard so much as its Name) which indeed was describ'd carefully, and its several Circumstances diligently accounted for; but as to the rest, there appear'd no more than at the Conclusion of a Chapter, two or three Names of its principal Divisions, and some Advantages which one or two of their Maritime Towns afforded this small Island, and then all was concluded. Now he that should take this for a just and adequate History of the whole, and earnestly contend for the Compleatness and Perfection of the Work, would be certainly taken for a *strange* Person; or rather would be thought in Jest, and to design the real exposing of the Folly and Ridiculousness of the Publisher thereof. These familiar Instances amongst Men, shew what *unbrib'd* and *untainted* Nature instantaneously pronounces in such Cases; and thereby direct us what we ought to judge in parallel ones, in which God himself is directly interest'd.

Where the Change of the Person is so far from altering, that it exceedingly confirms these Dictates of right Reason, and makes those Suppositions which were *barsh* and *incredible* with regard to Men, to become *intolerable* and *impious* when apply'd to the Deity. Whatsoever bears the Characters of Truth, Justice, Order, Wisdom, and Contrivance, which I cannot but expect from good and skilful Men; I undoubtedly require and believe of the Divine Majesty without the least

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Hesitation, in the highest degree and supremest measure imaginable. But whatsoever looks like Falseness, Injustice, Confusion, Folly, and a wild Disproportion or Precipitancy among Men, and which I am difficultly induc'd to imagine of frail and imperfect Creatures like my self, I am much more hardly persuaded, or rather find it impossible to believe of God. Those very Faculties, by which I am enabled to distinguish and pass a Sentence in these Matters, are deriv'd from God, and part of the Divine Image on the Soul of Man; and shall I so oddly make use of them, that what I could not be brought to credit of any one of my Neighbours, it were so uncouth, absurd, and preposterous, I freely admit and contend for when ascrib'd to my Creator? The Mind of Man, if it have leave to reflect freely, can no more acquiesce in any Scheme of the Works of God, where nothing of Fore-cast, Order, Decorum, and Wisdom is conspicuous; where every Period appears puzzling, immethodical, disproportionate, and ill-dispos'd, (and such is that of the vulgar Idea of the *Mosaick* Creation, as will be prov'd presently) than it can believe Contradictions; or that God is an infinitely wise and perfect Being indeed, but yet at the same time acting what, in the common Sense of Mankind, argues the greatest Folly and Imperfection; which entirely and with plenary Satisfaction to do, is certainly impossible. There is somewhat in the Human Soul that has too quick a Sense of the Decency and Fitness of things, and withal too deep a Veneration for the adorable Majesty of God, to be *easy under*, though it may be *overborn with*, such Notions. It cannot be willing to believe *that* of its Wise and Glorious Creator, which for another to believe of it

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self would be esteem'd as an high Indignity.

'Tis true, there is so great a difference between the compass of the Divine, and the straitness of Human Knowledge; between the state of Creatures and of the *Creator, Blessed for evermore*; there may be such an Incapacity in us to reach, or unfathomable, yet wise Reasons for God to hide some things from us; not to insist on the Divine Prerogative, which frees him from the Obligation of giving an Account of every thing to any of those Beings he has made; that we ought to be very wary of arguing from Man to God, without due Allowance for these Considerations; and consequently mighty cautious of affirming or denying whatever is ascrib'd to him from such a Comparison. In particular, where-ever a clear Revelation interposes, we are bound to quit our fallible Reasonings, and fully to acquiesce in such a Decision: it being impossible for *God to Lye*, but by no means so, that *we may be mistaken*.

But then this necessary Prudence and Wariness is chiefly, if not only, concern'd in sublime and mysterious Points; concerning the incomprehensible Nature, or unsearchable Providences of God; which Doctrines are sometimes so much above the present Scene of Things; so remote from the Notions and Affairs of this World; relate to and depend upon such other Systems of Beings or Circumstances of the invisible World; that we ought not rashly to pass our Judgment on them; but wait till our Souls become so improv'd, and our Understandings so enlightened in a future State; till our Means of Information, and Opportunities of looking through the whole Chain and System, be so many more than now they are, that we may justly be suppos'd more *competent Judges*,
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and *equal Arbitrators*, than at present the Imperfection of our Condition will permit us in Reason to pretend to.

But this being again precaution'd, to prevent any Misconstruction or Abuse of this Reasoning, I cannot but say, that since 'twill be hard to prove the Case before us to be of so exalted a Nature as to transcend our Faculties; and perhaps still harder to prove the plainness of the Revelation on the side of the common Exposition, I am fully persuaded, that while the Perfections of God are, as to our Assent, deduc'd from their Effects, they may in good measure, within certain Bounds, as was before discours'd, be judg'd of by what is observable among Men. And as whatsoever is worthy, good, and valuable among our selves, is rightly own'd as an Efflux and Gift of God; so whatsoever is preposterous, absurd, or disorderly, whatsoever is unworthy, base, or despicable, in human Affairs, cannot without great Indignity be believed of him; and where we have no other ways of determining, such Reasonings ought to be persuasive and decretory.

Now therefore, all this being said by way of Introduction to this, and some following Arguments, let us apply it to the Case before us; and supposing, (which yet I need not allow) that the Matter were indifferent on all other Considerations, let us speak freely whether such a Method, such Time, and such Proportion of the several Parts as the ordinary Scheme of the Creation sets before us, be in any degree so well contriv'd, and suitably dispos'd, as I say not a Divine, but a mere Human Architect may be suppos'd the Author of. I need not here give a particular Account of the vulgar Exposition of the first Chapter of *Genesis*: 'tis sufficiently known as to the

main Parts of it. But the Disproportions I would take notice of in it under this Head are these Three :

(1.) The *Length of the Day* usually assign'd, is wholly *disproportionate* to the Business done upon it.

(2.) While the Works of each of the other Days are *single, distinct, and of a Sort*, the Third Day has two *quite different*, nay, almost *incompatible* Works assigned to it.

(3.) And principally, The Earth with its Furniture, how inconsiderable a Body soever it be, takes up *four entire Days*, at least, of those *six* which were allotted to the whole Creation; whilst the Sun, Moon and Stars, those vastly greater and more considerable Bodies, are crowded into *one single Day* together.

(1.) The Length of the Day usually assign'd of twenty-four Hours is wholly disproportionate to the Business done upon it. This plainly appears by the History it self; where, to omit other Instances, the whole Train in the Generation or first Production of Animals, has no longer a Space afforded to it; when yet all Experience shews, that a much longer is necessarily requir'd, and has obtain'd in all the subsequent Ages. Now I do not question but it will be confess'd by all, that according to the constant Process of Nature, this Time is utterly insufficient for this Purpose: But what will be said is, that a Divine Power immediately interpos'd, and either form'd every thing in its grown and mature State; or at least accelerated and hasten'd the Course of Nature, so as to enable her to perfect each Creature in so short a Space; and that consequently, no straitness of Time ought to be alledg'd on this Account. In answer whereto I freely grant, that God *can* produce all Things in their most perfect

perfect State, in a Moment; and if that could be prov'd to have been the Method here, this Exception were of no Validity. But as on such a Supposition 'tis strange that *six entire and successive Days* should be requisite to, or pitch'd upon by an infinite and unlimited Agent, when the *instantaneous Creation* of the whole appears in this Case more agreeable to the Dignity and Power of the Creator; so I am pretty secure that this Hypothesis, how common soever, is repugnant to the *Mosaick History*. The Sacred Penman does there ascribe indeed the Origin of every thing to the Divine Power; yet no otherwise than the like would be, and is done by the holy Writers afterwards, nay, by every body at this Day; when yet the constant Method of Generation is exactly observ'd. If any of us were ask'd, Who made us? We should soon answer, God; without the least Imagination that we were excused from that nine Month's abode, and gradual growth in our Mother's Womb; which every one by the general Rule and Method of Nature is oblig'd to undergo. Which appears in the present case to be the Intention of the holy Writer, because he makes these very Animals Productions of the Water and Earth, as well as the proper Effects of the Divine Power; as hath been observ'd al- Gen. i. 20, ready on another Occasion. And those who deny ^{21, 24.} this gradual Generation according to the Course of Nature, must, without Reason, recede from the Letter of *Moses*, and all the old Traditions of the Heathen Philosophers, and that when by so doing they render this sacred History more difficult and unintelligible than it really is.

But if instead of *Immediate Creation*, it be said that 'twas only a *supernatural Acceleration* of natural Causes, without any other Alteration of the

Process; which is I think the only probable Evafion, and the faireft Suppofition of all other; I reply, That this is *gratis dictum*, without any Foundation in the Scripture, and fo as eafily denied as afferted; it is introduc'd only to falve the Shortnefs of Time mention'd in the Hiftory, which will be prov'd hereafter to ftand in no need of it; and it overthrows all Attempts of accounting for this fix Days Creation in a rational and natural way; for if a miraculous Power be allow'd in a needlefs cafe, we fhall be ever at a lofs how far to extend it, and where mechanical Caufes ought to take place. On which Confiderations I take this extraordinary Acceleration of natural Caufes to be, tho' not impoffible, nor (were there any intimation or neceffity of its Interpofition from the facred Hiftory) very improbable neither, yet in the prefent cafe, groundlefs, unnecessary, perplexing of the Caufe, and by no means a fufficient Solution in the prefent Affair. Which being therefore thus answer'd, the Argument remains in full Force, and the Length of the Days affign'd by the vulgar Hypothefis appears wholly difproportionate to the Works done therein; of which farther Notice will be taken hereafter.

(2.) When the Works of each of the other Days are *single, diftinct, and of a Sort*, the third Day has two *quite different, nay, incompatible* ones affigned to it. This is plain from the Hiftory, where the Divifion of the Waters from the Earth, or the Difinction of the Terraqueous Globe into Seas and dry Land, the firft Work on this Day, is fucceeded by that of the Production of the entire vegetable Kingdom; contrary to the perpetual Tenor of the other Periods of the Creation. How this comes about, or is accountable in the vulgar Scheme, I know not; and I believe
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the Reason thereof is very little enquir'd into, and less understood. But because this whole Difficulty will be urg'd against the Shortness of Days in the vulgar Hypothesis, and clear'd in ours, at their proper Places hereafter, I shall wave the farther insisting on it here, and proceed :

(3.) But principally, The Earth with its Furniture, how inconsiderable a Body soever it is, takes up *four entire days*, at least, of those *six* which were allotted to the whole Creation ; while the Sun, Moon and Stars, those vastly greater and more considerable Bodies, are crowded into *one single day* together. Now in order to our passing a rational Judgment in this matter, I shall take leave to represent to the Reader's View a short Comparison or Parallel between the Earth on one side, and the rest of the World on the other ; and see what Resemblance, Correspondence and Proportion there is between the former and the latter, either in its several Parts, or the whole taken together ; and this shall be done on such certain and undoubted Grounds and Principles as the late vast Advancement of natural Knowledge has afforded us ; and will be more at large explain'd in the following Pages.

This Earth then, on which we live, though it be in Diameter not much less than 8000 Miles, and so a vast Globe, if compar'd with those Bodies we daily see, imagine, and converse withal ; is yet one of the lesser of the primary Planets, and with *Jupiter*, *Mars*, and the other her Fellows, revolves round the great Center of our System the *Sun*, in a Year's time. 'Tis an opaque and dark Body, as they all are ; and in common with them borrows all its Light and Heat from that glorious Body which we just now observ'd to obtain the Center of their Orbits ; without which it, as

well as the entire Chorus of the other Planets, must be soon reduc'd all to one dark heap of Matter, far beyond the Description of the old caliginous and unprofitable *Chaos*, and in no capacity of ever emerging out of that horrid and frightful State. In Dignity, if our Earth expect not to come the *last*, yet is she so exceeded, in all things that might seem Characters thereof, by several of the rest, that there can be no manner of Claim to the *first* place. If she have a secondary Planet, the *Moon*, for her Attendant; (tho' in truth she is at least as serviceable to that Planet, as that Planet is to her;) *Jupiter* has certainly four; and our best Glasses have discover'd five about *Saturn*. The Density and Place of the Earth is pretty near the middle of the Planets; and as she exceeds, and is higher than some, so is she exceeded by, and lower than others in those respects. Her own secondary Planet, the *Moon*, has an Air much more homogeneous, pure, and transparent, than she at present enjoys; and in all probability free from Winds, Clouds, Storms, Tempests, Thunder, Lightning, and such other irregular and pernicious Effects, which frequently render our Atmosphere so contagious and pestilent to the Inhabitants of the Earth. In which Circumstances the generality of the other Planets imitate the Moon, and render our miserable Condition the more remarkable and sensible, as appearing thereby almost singular. Our Days and Nights are longer than those of some, and shorter than those of others of the Planets. The Figure of the Earth is nearly spherical, as is that also of the other Heavenly Bodies; its Surface unequal, with Mountains and Valleys, as well as that of the rest, especially the Moon's, appears to be. Only 'tis observable, that the last, tho' much less in Bigness, has her

her Mountains higher than those on the Earth. The Sea and Land, Mountains and Valleys, and other such corresponding *Phænomena* of the Moon, shew, that that small Planet is not nearer our Earth in Place, than in Quality and Disposition also. If we compute the true Magnitude or Quantity of Matter in the Earth, it will appear upon a moderate Estimate, that she is not the 200th Part so big as *Jupiter*, nor the 90th so big as *Saturn*, nor the 220,000th so big as the Sun. So that she is very inconsiderable, if compar'd with the rest of the *Solar System* only; but if with the entire Universe, or Systems of the fix'd Stars, in the Elegancy of the Prophetick Expressions, *as a drop of a Bucket, as the small dust of the Balance, yea less than nothing, and* Isa. xl. 15, 17. *vanity*. Inasmuch, that to all those remote Systems of the Heavenly Bodies, this Earth, with all its Fellow-Planets, are no more visible than those which, 'tis probable, revolve about any of them, are to us in these our Planetary Regions. And as we usually little think of those invisible Globes, so any of their Inhabitants, if such there be, never perhaps once imagine that there is such a Planet as ours, (about which we make such a mighty stir) in the World. As to the main Use of this Earth, 'tis to afford Habitation to a sinful and laps'd Race of Creatures, of small Abilities or Capacities at present, but of great Vices and Wickedness; and is esteemed, as far as appears, in its present Constitution so peculiarly and solely fit for them, that when they are gone, or their Dispositions and Faculties reform'd and improv'd, a better Scene of Nature, (*a new Heaven, and a new Earth*) is to be introduc'd, for such better and more noble Creatures. The old one, which now obtains, being in its present State, it seems, only a sort of Prison or Confinement, which is to be

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our Lot whilst we are sinful and miserable, but no longer.

And is this the only Darling of Nature, the prime Object of the Creation and Providence of God? Can such a Globe's Original, nay, of the external and visible parts of it only, claim four parts of six of that entire Space, which the Wisdom of God allotted for the Formation of all things in the whole World? while the Origin of the Sun, Moon, and numberless Systems of Stars has only a poor single part allotted to it? Must the expanding the Air between the Earth and the Clouds, be thought to equal the Disposal of all those Celestial Bodies into their several Regions? and the producing a few Fish and Fowl be a weightier Concern, and require more time than the replenishing all the other habitable Worlds with Beings suitable to their several Constitutions? Will a wise Builder bestow twice as much time in decking and adorning one By-closet of inferior Use, and that only to some of the meanest Servants too; as of the Royal Palace, with all its stately Rooms and Apartments, intended for the King himself, and his Courtiers? Should we hear of such strange Actions, and disproportionate Procedure among Men, we should not be able to induce our selves to give credit thereto. But it seems, Suppositions ten thousand times more disproportionate and unaccountable, when ascrib'd to God Almighty, are easily believ'd. So far can Ignorance, Prejudice, and a Misunderstanding of the sacred Volumes carry the *Faith*, nay, the *Zeal* of Men! and to such a mean Opinion of the most glorious and perfect of Beings are we thereby reduc'd, that, as if we were not content to think him such a one as our selves, but intended to depress him below the very meanest of us, we venture with Confidence and Eagerness to ascribe to him that disproportionate,

tionate, unequal, and unaccountable Disposal of the Works of Creation, which the simplest Artificer could not bear the Imputation of!

It may here indeed be alledg'd, that the Earth must be of all the rest the most considerable, because to its Inhabitants *alone* belong'd that stupendous and unparallel'd Method of Divine Providence, I mean the Incarnation of the Only-begotten Son of God. Now in Answer to this, I say, (1.) 'Tis not *so certain* that the Son of God was *alone* concern'd with the Inhabitants of this Earth in the mighty design of his Incarnation and Mediation. St. Paul says, *That in the dispensation of the fulness* Eph. i. 10. *of times, he might gather together in one all things in Christ, both which are in Heaven, and which are on Earth, even in him.* And again, *It pleased the* Colos. i. *Father that in him should all fulness dwell: And (ba-* 19, 20. *ving made peace thro' the blood of his cross) by him to reconcile all things unto himself; by him, I say, whether they be things on Earth or things in Heaven.* I say, (2.) That tho' the Advantages of our Saviour's Incarnation and Mediation, should be wholly confin'd to the Inhabitants of this Earth, that does not shew that the other parts of God's Creation are not equally regarded by him: but only that the *peculiar Circumstances* of that fallen Race of Creatures which belong'd to this Earth, and of that alone, did require so wonderful a method of Recovery as that by the Only-begotten Son of God in our Flesh. If a King should send his Eldest Son into a particular Province to quiet a Rebellion, and use peculiar Means to reduce that Province to its ancient Obedience, and into no other Part of his Kingdom; this would only prove that the Circumstances of that Province, and of that only, requir'd so extraordinary a Treatment; and not that the King had a less Care and Concern for those other Provinces

Provinces which were all along obedient to him. Tho' the Prodigal Son had an extraordinary and peculiar Reception and Entertainment, yet sure the ever Dutiful Son had not the smaller Interest in his Father's constant Approbation and Love. The Application of both the Parallels is too easy to be more largely insisted on.

It must here be confess'd, That such Notions of the *Mosaick* Creation, as I now oppose, having begun, or at least been chiefly established and propagated when the *Aristotelean* Philosophy, and *Ptolemaick* Astronomy were believ'd; those who have embrac'd them till this Age were less absurd, and nearer to some tolerable degree of probability. For so long as the Earth, with its adjoining Elements, was suppos'd the Center and Basis of all the World; while the Distance of the Heavenly Bodies was believ'd to be, comparatively to what we now find, very small and inconsiderable; and all their Motions perform'd about us their proper and immovable Center; while the whole Series of Spheres above (tho' the several distinct ones mov'd the contrary way by their own peculiar Motions) was suppos'd in twenty four hours to be constantly hurry'd from *East* to *West* by the *Primum Mobile*, on purpose to cause Day and Night to us below; while Comets were esteem'd Exhalations from the Stars or our Atmosphere, and sent only at certain seasons to affright Mankind with their fiery tails, and then to be dissipated and vanish into Vapours again; while the Sun and Stars, in the opinion of the Philosophers themselves, were nourish'd by Steams from our Earth; and while the last nam'd were either suppos'd to be stuck in one spherical Superficies as the fix'd Stars, or fasten'd in their solid Orbs, like a Nail in a Cart-wheel, as the Planets, and no other use imagin'd but to twinkle to us in Winter Evenings, and by
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their Aspects to forbode what little Changes of Weather, or other Accidents were to be expected below; while no other habitable World was dream'd of than this Globe of Earth; no other Animals once conjectur'd at, besides those on the Face thereof; while Mankind was look'd on as the sole Lord of the Creation, and Him for whose Sake all other Creatures in the World were made; and while 'twas commonly granted that, as all things, the visible Heavens and Earth, with their entire Furniture began with him; So at the conclusion of his Succession, or the period of human Generations here, must they for ever cease and be annihilated; while all this, I say, was the current Philosophy, 'tis not very surprising that the *Mosaick* History we are now upon was understood in the vulgar Sense, and seem'd not wholly disagreeable to the presumed Frame of Nature; and 'twas not hard to believe, that this Earth and its Inhabitants, in the general Opinion, the main and principal Concern of all, and that to whose Uses every thing else entirely serv'd, had the principal Care bestow'd upon it, both in its original Creation, and its subsequent Changes and Revolutions.

But tho' such a Scheme, and such an Apprehension were passable enough in the Days of our Forefathers, 'tis by no means so now. Those greater degrees of Knowledge which the Providence of God has in this Age afforded us, make such Opinions intolerable in the present, which were not so in the past Centuries. 'Tis now evident, That every one of the Planets, as well as that on which we live, must have a Right in its Proportion to share in the Care of Heaven, and had therefore in all probability a suitable space or number of Days allow'd to its proper Formation;

tion; much what the same Separations of Parts, Digestions, and Collections, being no doubt to be suppos'd in the original Formation of any other, as in that particular Planet, with which *Moses* was concern'd. And if one or two on account of their Smallness, might be finish'd in less; the rest on account of their Bigness, from a parity of Reason, would take up much more than that six Days Time which was spent in our Earth's Formation.

And let the *Reader* judge, if it be so impossible to reduce the Planets alone within the fourth Day's Work, how much more so will it be (in case we allow Degrees of Impossibilities) to reduce thither that vast, noble, and useful Body, the Fountain of our Light and Heat, the Sun; and still in a prodigious degree more so, to include the immense and numberless Systems of the fix'd Stars; among whom when the Sun is but one, and perhaps no bigger than the rest; (and consequently to have in Reason but an equal Portion of Time with them allotted for its Origination;) it must, tho' probably above 220,000 times as big as the Earth, while the Earth takes up four *entire* ones, be thrust into the *Corner* of a single Day; *Corner*, did I say? rather *Minute*, nay, *Moment of a Day*; and 'tis uncertain whether even that Pittance of Time can fairly and separately be allow'd to it. So that one need not fear to assert, That he who should affirm the Divine Power to have spent four *entire* Days in the Formation of a Fly or Worm, nay, of a single Plant or Herb; and but one in the Formation of the Terraqueous Globe with all its Parts, Regions, and Furniture, would be less unreasonable than some Expositors now are, and more observe Decorum, Fitness, Agreement and Proportion, than they do in the
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vulgar Interpretations of the *Mosaick* Creation. And I need not be afraid to call all that are Masters of Astronomy and Philosophy, to attest the Fairness of such a Comparifon. And can any one who is fenfible of this, and entertains no other than great and worthy Thoughts of his All-wife Creator, embrace fo fond and fo ftrange an Opinion?

And if the Reader will pardon a fhort Digreflion, and give me leave to fpeak a great Truth on this occafion, I cannot but obferve, That 'tis not the genuine Contents of the holy Books themfelves, but fuch unwary Interpretations of them as thefe, which have mainly contributed to their Contempt, and been but too inftrumental to make them appear abfurd and irrational to the free Reason of Mankind. For when Men found that the Scriptures, according to the univerfal Senfe of Expositors, afcribed fuch things to God, as their plainefl Reason could not think compatible to a wife Man, much lefs to the All-wife God; they were under a fhrewd Temptation of thinking very meanly of the Bible it felf, and by degrees of rejecting it, and therewith all Divine Revelation to the Sons of Men. How fatally this Malady hath fpread, of late efpecially, I need not fay; and tho' I fully believe the main Stroke or Step, as to the generality, be vicious Difpofitions, and a debauched Temper; yet how far fuch ill-contriv'd, unfkilful, unphilofophical Interpretations, or rather Mifrepresentations of Scripture, particularly thofe relating to the material World of which we are now fpeaking, may have contributed to fo fatal and pernicious an Effect, deferves the moft ferious and fober Confideration.

This Mifchief is not to be remedied, nor the Veneration due to the Sacred Volumes retriev'd by an obftinate maintaining fuch ftrange opinions

as those here referr'd to, by patronizing the same with Divine Authority, and then making vehement Invectives against such (as many unskilful, yet good Men are ready to do,) whose only Fault is this, that they can no more be induc'd to believe what is plainly unworthy of, and unsuitable to the Divine Perfections, than what is evidently contradictory to Divine Revelation. Wise Men would rather set themselves carefully to compare Nature with Scripture, and make a free Enquiry into the certain *Phænomena* of the one, and the genuine Sense of the other; which if Expositors would do, 'twere not hard to demonstrate in several such Cases, that the latter is so far from opposing the Truths deducible from the former, or the common Notions of Mankind, that 'tis in the greatest Harmony therewith; and in those Cases (where the Thing mention'd is within the Sphere of human Knowledge) no less accountable to the Reason, than enforc'd on the Belief of Mankind. And I persuade my self, if there were a careful Collection made of the ancient Knots and Difficulties in the several Parts of the Bible, with relation to such Points as we are upon, or any others of a different Nature; and how very many of them, as Preludes and Pledges of the rest, are now entirely clear'd, or might easily be so; it would more contribute to the Recovery of the ancient Honour, and due Esteem of the sacred Scriptures, than all the most zealous and general Harangues from some popular Topicks, either for them, or against their Contemners, the loose *Deists* and pretended *Socinians* of this Age. For my own Part, I cannot but profess, that tho' I be very nice and tender in the Reasonableness of my Faith, and desirous to admit nothing but what agrees to the Divine Attributes, the common Notions

tions of our Souls, and the *Phænomena* of Nature; yet upon an impartial Enquiry into some of the most perplexing Difficulties occurring there, I have obtain'd so great a Measure of Satisfaction about them, that my Scruples now cease, and I cannot doubt either of the Truth or Divine Authority of the Scriptures. I do not mean, that all the Difficulties are in particular vanish'd and perfectly clear'd to me; that is what is scarce to be hoped for in this World: But I have so frequently met with fewer Difficulties in the Consideration of the Books themselves, than in the common Interpretations, and those very Comments which ought to assail them; and in so many, and those most remarkable Points of all, have met with such clear and plenary, tho' unexpected Satisfaction, that I have great reason to believe the rest equally capable of the same; and to remain constant in this Assurance, that 'tis the ignorant or foolish Expositions of Men, not the natural and genuine Sense of the Words themselves, that makes us imagine, Scripture, Reason, and the Nature of things irreconcilable or contradictory to one another. And I hope the Instances he will meet with in the following Theory, will go a great way to persuade the unbiass'd Reader of the same Truth; and to convince him, that greater Satisfaction is to be look'd for from the View of God's own Books of Nature and Scripture, than those of any Men whatsoever. Whatever incompetent Judges may say, nothing will so much tend to the Vindication and Honour of reveal'd Religion, as free Enquiries into, and a solid Acquaintance with, (not ingenious and precarious Hypotheses, but) true and demonstrable Principles of Philosophy, with the History of Nature, and with such ancient Traditions as in all Probability were deriv'd from

Noah, and by him from the more ancient Fathers of the World. From which *Mediums* what surprizing and unhop'd for Light may be given to some famous Portions of the Holy Scriptures, the following Pages will, 'tis hoped, afford some convincing Instances, and prove sufficient to take away Men's ungrounded Fears and Apprehensions in such Matters; and, by the Divine Blessing, appear a seasonable Attestation to the Certainty and Authority of those *lively Oracles* on which our Happiness in this and the next World does so vastly depend. But I must leave this Digression, and proceed.

VI. The vulgar Scheme of the *Mosaick* Creation, besides the Disproportion as to Time, represents all things from first to last so disorderly, confusedly, and unphilosophically, that 'tis entirely disagreeable to the Wisdom and Perfections of God.

And here I might justly appeal to the Conscience of every careful Reader, even though his Knowledge of the true System of the World were not great, whether the vulgar Account has not ever seem'd strange and surprizing to him? But if he were once philosophically dispos'd, and allow'd himself a free Consideration of it; whether it has not ever been the most perplexing thing to his Thoughts that could be imagin'd? 'Tis well known how far this Matter has been carried by wise and good Men; even to the taking away the literal, and the resolving the whole into a popular, moral, or parabolick Sense. And under what Notion this History on the same Account has appear'd to others, of no less free, but less religious Dispositions and Thoughts, I need not say: what is indeed Matter of Doubt
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and Perplexity to pious Men, being unquestionably to the loose and profane, the Subject of Mirth and Drollery, and the sure Encouragement to Atheism and Impiety. But I shall not content my self with this general Reflection; but instead of prosecuting such a Discourse any farther, shall assign such particular Instances of the irregular and unbecoming Procedure in the vulgar Scheme of the Creation, as seem plainly disagreeable to the Divine Wisdom, and unsuitable to the Nature of Things.

(1.) Bodies alike in Nature have here an unlike Original.

(2.) Bodies unlike in Nature have a like Original.

(3.) Bodies most considerable in themselves, have the most inconsiderable Accounts given of them.

(4.) No Bodies but the Earth have either Time for, or Particulars of, the Formation of the several Parts assign'd.

(5.) The Light appears before its Cause and Fountain the Sun was made.

(6.) The Excavation of the Channel of the Ocean, and the Elevation of the Mountains is unnatural and indecent. Of each of which I shall say but a Word or two, and then as briefly argue from them.

(1.) Bodies alike in Nature, have an unlike Original. Our Earth is one of the Planets, and in all reason belonging to their Formation; yet is she the subject of the Second, Third, Fifth, and Sixth Days Works, while the rest are included in the Fourth Day.

(2.) Bodies unlike in Nature have a like Original. The Sun, a glorious Body of Light,

with his Fellows the fix'd Stars, are join'd in the fourth Day with the opake and dark Globes the Planets.

(3.) Bodies most considerable in themselves, have the most inconsiderable Accounts given of them. This is very obvious in that mighty ado about our poor Earth, while the vastly greater and nobler Bodies of the Sun and Stars are scarce taken any notice of. And how disproportionate such a Procedure is, the Comparifon already made of the Earth on one fide, with the rest of the World on the other, does more than sufficiently demonstrate.

(4.) No Bodies but the Earth have either Time for, or Particulars of, the Formation of the feveral Parts assign'd. For when four Days are wholly taken up with the Particulars relating to our Earth; the Divifion of its aerial from its earthly Waters; the diftinguifhing the latter from the dry Land, and draining them into the Channels of the Seas; the Growth of Plants; Generation of Fish, Fowl, and terrestrial Animals; and at laft the Creation of Man, with feveral Circumftances relating to him, and the other Creatures; not a Syllable as to the Particulars of the rest of the World. Light is only commanded to fhine on the first Day; and the heavenly Bodies made on the fourth, and there's all, as to themselves, which occurs here.

(5.) The Light appears before the Creation of the Sun, from whence it is deriv'd; that being the Work of the first, this of the fourth Day. Which how philosophical and accountable it is, let the Reader judge.

(6.) The Evacuation of the Channel of the Ocean, and the Elevation of the Mountains, is unnatural and indecent. For when the Earth

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was at first even, and cover'd with Waters, Expositors imagine, that God, as it were, digg'd a vast Channel for the Ocean, and heav'd away the Earth, and plac'd it on all Parts of the Globe, to make the Mountains. Which how indecent it is, I had rather leave to the Judgment of the Reader, than to stand here to exaggerate; especially where the naked Representation of the thing it self is a sufficient exposing thereof to free Thinkers.

These obvious Remarks on the vulgar Scheme of the *Mosaick* Creation, (to omit the passing by of the entire invisible World, whether within or without the Surface of the Earth, whether corporeal or spiritual) are, I think, sufficient Demonstrations, that 'tis a very distant one from the true Nature of Things; and such as is both unworthy of the Writer and Author of the sacred History. Whoever will take the Pains carefully to consider the System of Nature, and compare it with these Remarks, and the common Opinion of the proper Creation of all Things in the six Days Work, will not, I believe, be at a loss for Arguments to over-turn the old, and to prove that a *New Theory* is to be enquir'd after, and a narrower World to be expected in the First Chapter of *Genesis*, than has generally been.

But before I conclude this Head, I must here observe, that the Consideration of these Matters has had so great Influence on our late most excellent Commentator on *Genesis*, that tho' he keeps Bishop more strictly to the Letter of *Moses* than others, Patrick, yet he finds Occasion and Room for these four great Concessions, no less contrary to the vulgar, than approaching to the present Account of the History of the Creation.

(1.) He is willing to allow that *Moses* meddles

not with the *entire Universe*, but with the *Planetary System only*.

(2.) He allows the *Creation* of the World to have been over *before* the six Days Work begins.

(3.) He grants the same six Days Work to be the regular and orderly Reduction of a confused *Chaos* into an habitable World, without any strange Miracles in every Part.

(4.) He supposes, that for a considerable Time before the six Days Work began, there were such preparatory Agitations, Fermentations, and Separations or Conjunctions of Parts, as disposed the whole to fall into the succeeding Method, and introduce the six Days Productions following.

Which Concessions of so great a Man and excellent a Commentator, as they argue his Sense of the Necessity of receding from the vulgar Hypothesis, so they, I confess, lessen and diminish the Difficulties in this History. *Lessen*, I say, and *diminish*; not take them away. For besides the Want of any Foundation in Scripture, as far as I see, for the Distinction between the fix'd Stars and Planets; the Arguments I have all along urged, reach, and are fram'd with regard to this limited Hypothesis also; and, with those yet to come, are, I think, abundantly sufficient to my purpose still, and will demonstrate the unaccountableness of the History of the Creation even on this, tho' much more on the common Interpretation.

VII. The *Mosaick* Creation does not extend beyond this Earth, because the alone *final Cause* of all therein contained, is the Advantage of Mankind, the Inhabitant thereof.

Now that the *final Cause* of all the Particulars mention'd in the History before us, is here rightly assign'd, is not only visible in almost every

every Verse of it, and in the Places of Scripture afterwards referring to the same thing; but commonly acknowledg'd, nay, contended for, by the Patrons of the vulgar Account; so that I shall here take it for granted. But then as to the consequence, that therefore the Creation is no farther to be extended, or at least not so far as here it must otherwise be, to the Sun and Planets; nay, with the most, to the innumerable Systems of the fix'd Stars; 'tis to me so natural and necessary, that methinks 'tis perfectly needless to go about the Proof of it. That so vast and noble a System, consisting of so many, so remote, so different, and so glorious Bodies, should be made *only* for the Use of Man, is so wild a Fancy, that it deserves any other Treatment sooner than a serious Confutation; and one may better think silently with one's self, than with due deference and decency speak, what naturally arises in one's Mind on this occasion.

If 'tis an Instance of, or consistent with the Divine Wisdom, to make thousands of glorious Bodies for the sole Use of a few fallen and rebellious Creatures, which were to live for a little while upon one of the most inconsiderable of them! To create an innumerable Multitude of Suns and Planets, and place them at prodigious Distances from us and from one another (the greatest part of which were never seen till the late Invention of the Telescope; and of such as are visible, the Sun excepted, the single Moon, as despicable a Body as it is in comparison to the most of the others, is much more beneficial to us than they all put together;) for the mere Convenience of one little Earth! If 'tis wise and rational to make the Sun more than 220,000 times as big as that Globe it was to serve, only

that it might be plac'd above 80 Millions of Miles off: (for in a nearer Position it would have scorch'd and burnt, instead of warm'd and invigorated the Earth) when a small fiery Ball plac'd near us would have done as well! To make a vast Number of Planets, (every way as capable of Creatures of their own) only for the Sake of us on Earth; that we might in the Night-time view and calculate their Positions and Motions! To place five secondary Planets about *Saturn*, and four about *Jupiter*, that after for more than six thousand years no one had dream'd of their Existence, a few Astronomers might, with their Glasses, peep at them, and observe their Periods! To appoint the Orbit of one of the primary Planets (*Mercury*) so near the Sun, that not one in a hundred ever gets a distinct View of him all his Life! To move the Comets in Orbits so extremely large and elliptical or oblong, that by their Distance from the Planetary Regions most part of each Revolution, they should be so little observable, that the World were just ending before they could be known to be other than Masses of Vapours soon conjoin'd, and as soon dissipated again, and now not visible the hundredth or perhaps thousandth Part of their Periods! To make all this immense Frame of the heavenly Systems, so glorious, august and magnificent, and so deserving of our Contemplation; and yet withal to frame our Eyes and Sensations in that manner, as to be incapable to discern or imagine any thing thereof in comparison! so that had not Astronomical Observation rectify'd our Mistakes, we must have thought the whole World not near so big as one of its least Bodies really is; and all this without any farther Prospect, or nobler Design, than the single

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Use and Advantage of Mankind! If, I say, all this be the effect of ineffable Wisdom and Contrivance, and worthy to be believed of the All-wise God; 'tis scarce possible to suppose, in the material World at least, what will not be equally so. And such strange and astonishing Incongruities, which among poor Mortals would unquestionably argue the most extravagant degree of Folly; in the Deity, *Blessed for evermore*, must be Arguments of unbounded Perfection, and Effluxes of infinite Reason, Wisdom, and Prudence. Certainly one ought to be very well ascertain'd of the Sense of Scripture, before from thence one venture to assert such *unreasonable* Opinions.

Nay even tho' the Sense of Scripture seem'd exceeding favourable to any Scheme of this Nature, yet in that case, a considering Person would chuse rather honestly to own his Ignorance, and confess he did not understand the Matter, than be *positive* in that which is so plainly repugnant to the Divine Perfections.

And this (to digress a little) is methinks the only safe and rational way of Procedure in those cases, where we cannot reconcile the Divine Attributes, the *Phænomena* of the World, or the Reason of our own Minds, to the revealed Word of God, *viz.* In the first place carefully to consider the Texts concern'd, and whether they are not misapply'd; if on such a Consideration we cannot find them to be so, and that, except a forc'd, unnatural and violent Sense be put upon plain Words, the Difficulties still appear insuperable; 'tis then our Duty and our Wisdom to imitate the *Jews* in that admirable and pious Proverb in these cases, *Cum Elias venerit solvet Nodos*: To sit down and rest satisfied with this Expectation, That when the Divine Wisdom sees it a fit time, all will be assail'd; and every one
of

of the Knots of Scripture and of Providence untied. To stay with Patience for those *ἰδιοὶ καιροί*, peculiar Seasons, which with regard both to the Improvement of Knowledge, and unveiling of Mysteries, no less than the fulfilling Decrees, the
 AAs i. 7. *Father has put in his own power.* And as the old Jews should in vain have attempted the entire understanding of their own Ceremonial Law till the *ἰδιοὶ καιροί*, the Coming of Christ; so I believe we must not expect the clearing of every Text of Scripture, and of every secret of Providence, till the *ἰδιοὶ καιροί*, *the time appointed of the Father.* Till then we ought not, where insuperable Difficulties occur, by a bold Determination to run counter to God, either in his Word, whether engraven on our Minds, or written in the Bible, or his Works visible in the World.

'Tis hard to say, whether those dishonour God most who embrace Doctrines, suppos'd deducible from Scripture, tho' plainly absurd and unreasonable in themselves; or those who venture to deny or at least wrest and prevaricate with the obvious Meaning of such Texts whence those Doctrines us'd to be inferr'd. Both these Methods of Procedure are bold and dangerous; Effects of our own Pride, and too high an Opinion of our proper Apprehensions and Abilities; and of sad Consequence to our selves, to others, and to Divine Revelation. There is a third or middle way, which, tho' an instance of real Self-denial, we both may and ought to take. *Let God be true, and every man a liar.* Our Understandings are finite, our Capacities small, our Sphere of Knowledge not great. We depend on God Almighty as to what we *know*, as well as what we *have*, or what we *are*. 'Tis possible it may not yet be the proper Season for unravelling the Mystery, and so the requisite Helps not yet

yet afforded: Our own Unskilfulness or Prejudices; some false Notions or precarious *Hypotheses* we have embrac'd; our misunderstanding the Nature of the Scripture Style; a Mistake of a Copy; the Ignorance of the various Stages and Periods of the World to which the particulars belong; with many other such Circumstances, may justly be supposed the occasions of our Difficulties, without calling in question either the Truth of our human Faculties, the Attributes of God, the *Phænomena* of Nature, or the genuine Sense of the holy Scriptures. And truly were I asked in such a Case, how I could satisfy my self, or resolve the Point; I could not more properly answer than by alluding to the *Jewish* Proverb before-mention'd; and alledging that, *Cum Messias venerit solvet Nodum*; till which time I might desire leave to defer my farther Answer.

And here, from a general View of what has been said on these three last Arguments, we cannot but observe into what erroneous Extremes good Men have been betray'd, with relation to several main Difficulties occurring in the sacred Writings: while from a profound respect to the revealed Word of God, the most were willing to lay aside the use of their own Reason; and others from a no less veneration for the Divine Attributes, and regard to those common Notions which God had implanted in their Souls, were willing to indulge too great a Liberty in the Interpretation of Scripture. The former, being generally pious and devout Souls, but little vers'd in Contemplation, or the Improvements of natural Knowledge, were dispos'd to receive all that a vulgar and religious, tho' less wary and prudent Exposition, should recommend to their Assent. The latter having added to their Piety and Virtue, a careful Enquiry
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into Nature, and a freer Exercise of their human Faculties, and observing how heavy Imputations some common Interpretations laid on the Divine Majesty, how disagreeable they were to external Nature, as well as the Reason of Mankind, were carried too far on the other hand; and whilst the latter were secur'd, were not proportionably solicitous about the former: I mean, so that nothing but what Reason, the Attributes of God, and the System of the World allow'd, were admitted, these did not take a proportionable Care that the natural sense of Scripture were equally provided for.

What I would here farther observe, is, the equal Condition and Deserts, but the unequal Reputation and Fate these two sorts of Men have generally met with in the Christian World. Their Characters to me seem so correspondent, and their contrary Mistakes so equally wide from Truth, equally derogatory to the Honour of God, and yet equally proceeding from a religious Principle, a desire to secure the Interest of Divine Revelation; that to me they seem to deserve the same Respect and Commendation for their sincere Endeavours and pious Intentions; the same Pity and Pardon for their Errors and Mistakes. But it has happen'd much otherwise: for by reason of the little Leisure and Abilities of the generality of Teachers to cultivate their own Reason, or make any successful Enquiries into the natural World; the former sort being in themselves most numerous, and, as must needs happen, having the most part of Christian People on their side, did with Zeal and Earnestness condemn the latter; and tho' themselves on one side did as highly dishonour the sacred Oracles, as the other on the opposite, yet they vehemently laid *that* Imputation on the latter, and decry'd them as secret Underminers of that
Word

Word of God they pretended more rationally to explain. 'Twere easy to give Examples in this case; but I shall content myself with one concerning those very Histories of the Creation and Deluge, which I am to explain in the following Theory.

'Tis well known what great, and hitherto insuperable Difficulties these Histories have involved in them, to the general View of Mankind; and how much still greater, and still more insuperable those Difficulties appear'd to philosophick Enquirers, who came more nicely to consider them, and compare what was asserted in the holy Scriptures, with the true Frame and System of external Nature. The Consideration of these Things so affected a great and good Man, that he resolv'd on a noble Attempt, and undertook to clear those Points; and shew that the *Temporary Origin of the World from a Chaos*, and an *Universal Deluge*, were rational and accountable Theorems, and thereby take away that blot and obstacle, which the seeming Impossibility of these things laid in the way of ill-disposed Persons. In which Matters, he employ'd his utmost Skill in the best System of Philosophy then known in the World; his most diligent Researches into the sacred and prophane Accounts relating to those anciently more known *Phænomena* of Nature, together with such other Helps as his own excellent Abilities could afford him; and that as to several main and principal Strokes, to very great Satisfaction, and to the very remarkable Illustration of the holy Scriptures. But in the Prosecution of this Scheme, being so vast, so noble, so uniform, so coherent, and withal so new and surprizing, it at last appear'd that such his Theory would not in several Particulars accord with the Letter of Scripture. This unhappy

Dr. Tho.
Burnet.

happy Diffonancy the Theorist was soon sensible of, and no doubt not a little concern'd about. In which Streight, seeing no possible way of securing the main Points without so unpleasing a Concession; instead of resolving to rest satisfied in the natural sense of Scripture, and acquiescing in the Divine Revelation, till farther Means of clearing the whole should offer themselves, which I think is a good Man's Duty in such cases, he ventur'd to suppose that the sacred Books were not always to be so literally and naturally understood, as was generally believ'd hitherto. He alledg'd, That considering the mean Capacities of the *Jews*, which were not capable of such Points of philosophick Truths; considering the most ancient way of conveying (or rather of concealing) sublime Theorems, by Parables, Fables, and Hieroglyphicks; considering the Scripture Style in some other cases, very much different from the present plain and explicit way of Discourse, and nearer akin to that most ancient Method; considering the main End of the holy Writings, the Benefit of the moral World, seem'd not to require a strict adherence to Truth, in every circumstance relating to the natural; nay, rather enforc'd a receding from it in some cases; considering, lastly, that all Ages had in vain endeavour'd to clear these points according to the strictness of the most obvious Sense, and that the greater Improvements in Philosophy seem'd but to render them still more unaccountable; considering, I say, all these things, he supposed that the holy Writers only secur'd the fundamental and general Verities; involving the rest under, and explaining the whole by a way of speaking, which was mystical and mythological; rather popular than true; and fitted more to the
needs

needs of Men, than to the reality of Things. This is, I think, a fair and full Account of the Opinion, and a genuine Explication of the Occasion of this unhappy slip of our late excellent *Theorist*; and such an one I acknowledge 'tis, as in it self, has no solid or necessary Foundation; is of ill Consequence to the Authority of the holy Scriptures, and dishonourable both to their Penmen, and chiefly to their principal Inditer, the blessed Spirit of God.

In which censure, if the learned Author think me too free, or too severe, he will, I hope, see Reason to excuse, and not be displeas'd with me, when I have own'd, as I must ingenuously do, that *in accusing him, I condemn my self; for I my self, in great measure, have thought the same things.* For I cannot but with the *Theorist* confess, that the Difficulties in the vulgar Expositions were so great; such absurd Incongruities ascrib'd to God by them; the true System of the World did so disagree, and increase the Scruples; the main Histories themselves appear'd so impossible to be any other way secur'd; several of the Accounts given by the *Theorist* were in the main so ingenious, so probable, and so agreeable to ancient Tradition, upon a cursory Consideration; and the Arguments before-mention'd seem'd to me so considerable, that 'twas not easy for me to deny all Assent to that very Conclusion, which yet on farther Enquiries and Discoveries, I think not unworthy of the foregoing Censure. And I should esteem it a very signal Happiness, if, as *that* Theory was so instrumental in drawing me into the fore-mention'd Mistake; so *this* might be fortunate enough to persuade the Author of that, of the opposite Verity; in which the Discoveries it contains have fully settled my own Mind; and are, I think, sufficient

cient in themselves to settle the Minds of others.

But to wave these too ambitious Expectations, I cannot but say so much in Behalf of that Learned *Theorist*, That as he justly deserves the highest Commendations for so generous and worthy an Attempt; for the great Illustration he has given those Histories from the most ancient traditional Learning; and the Light afforded to the holy Scriptures in several, and those very considerable Points; so he has, I think, Reason to expect an easy Pardon where he was not able to do the same; especially, when not only Pardon, but the freest Praises are bestow'd on those, who, as I before observ'd, equally have expos'd the Honour of God, and equally derogated from the Reputation of the sacred Writings by their unwary and unskilful Interpretations. A good Man, who to the highest Veneration for the Perfections of the Divine Nature, has join'd a careful Enquiry into the Frame of the World, and a free, but modest Use of those Faculties God has given him; and has withal exactly consider'd the undoubted Evidence for the Divine Authority of the Scripture; ought to be, and will be as tender of believing a Sense which is contrary to his innate Notions, to the Perfections of God, and the certain Observations of Nature, as of that which puts a force upon the Words themselves, and renders them meerly popular and mythological. And by consequence either those who so frequently and zealously do the former, are to be condemn'd, which yet the Christian World has been far from doing; or those who have been forc'd upon the latter, ought to escape any greater Severity. For my own Part, as in such difficult cases, I easily pass over the Mistakes, and value the Truths discover'd by any well-dispos'd Persons; which is but
a due

a due Debt owing from one fallible Creature to another: So I humbly bless God, the Author and Giver of all good things, for that Light he has afforded me (and which, by the Divine Blessing, I hope the following Pages will afford the Reader) in these Matters; by which I am convinc'd of the no-necessity of opposing the *Literal* to the *True*; the *Obvious and Natural*, to the *Rational and Philosophick* Interpretations of the Holy Scriptures; and shall cheerfully wait for that happy time, when all doubts being remov'd, and all objections prevented by the Improvement of our Knowledge, and the Conduct of the Divine Providence, Reason and Revelation shall reciprocally bear witness to, and embrace each other; when no one shall be able to pretend to the one, but he who is equally acquainted and satisfied with the other: and the whole reasonable Creation shall unite their Hearts and Tongues in Hymns to God, saying, *All thy Commandments are faithful. Thy Statutes are right, rejoicing the Heart. Thy Judgments, O Lord, are true and righteous altogether. Righteous art thou, O Lord, and just are thy Judgments. Great and marvellous are thy Works, O Lord God Almighty! Just and true are thy Ways, O King of Saints!* But to return from this Digression, and to proceed.

Psal. cxix. 86.
Psal. xix. 8. 9.
Psal. cxix. 137.
Apoc. xv. 3.

VIII. I prove that the *Mosaick* Creation extends no farther than our Earth, and is of no other Nature than is assign'd here; because neither the Intentions of the Author require, nor the Capacities of the People could bear either a strictly philosophical, or a truly universal Account of the Origin of Things.

The Design of *Moses*, the inspired Penman, or rather of that blessed Spirit which inspir'd him, in this History of the Creation, were, not the gratifying the Curiosity, or satisfying the

philosophical Enquiries of a few elevated Minds, but of a more general and useful Nature; namely, to inform the *Jews*, and the rest of the World, that all the visible Frame of Heaven and Earth was neither existent from all Eternity, nor the result of blind Chance, fatal Necessity, nor unaccountable Accidents, but the Workmanship of God Almighty. To make them sensible that every Being they had any Knowledge of, was deriv'd from, and subject to that *Jehovah* whom they worshipp'd; and that in him *themselves*, with all their Fellow-Creatures in the open Air, on the wide Earth, and in the deep Seas, *liv'd, mov'd, and had their Being*; who therefore must needs be the Governor and Ruler of them all. To affect their Minds, by this Means, with the awfulest Veneration for the God of *Israel*, and inspire them with a just Gratitude to him for all their Enjoyments; who had not only created this Earth for Mankind, and furnish'd it with various Creatures for their Use; but beside these terrestrial, had made the very celestial Bodies subservient to their Necessities. To demonstrate the original Goodness and Perfection of things, and that therefore whatever was Evil must have been the consequent of Man's Fall, and not of God's primary Introduction; and thereby to teach Men Humility, and raise their abhorrence of Sin, the cause of all their Miseries. To shew them the unreasonableness of all sorts of Idolatry, or of the Worship of any visible Beings, tho' never so useful or glorious, by assuring them they were all in common the Creatures of God, and all their Influences, of what kind soever, entirely deriv'd from him, and under his disposal. In short, the main design was to secure Obedience to those Laws he was about to deliver from God to them, by giving them

Acts xvii.
28.

them the greatest and justest *Ideas* of their Legislator, the *Almighty Maker of Heaven and Earth*.

These were, I suppose, the principal Reasons of thus recording the Creation of the World, and these Reasons made a particular Account of the visible Parts of this Earth, with all its Furniture, that was observable and expos'd to their daily View, necessary and expedient; nay, they enforce'd some kind of mention of the Heavenly Bodies, so far as they were concern'd with us below, and so far as to shew, that God originally created them, as well as the more ordinary Bodies on the Face of the Earth. All this was but proper and necessary in order to the foremention'd Purposes. But why a natural and philosophical Account should be given of the primary Formation of such remote and different Systems of Bodies, whose real Bigness, Distances, Natures, and Uses, abstractedly consider'd, never came into Mens Thoughts, nor were once imagin'd by them, I cannot so easily tell.

Especially, if it be consider'd, that the Capacities of the *Jews*, to whom *Moses* peculiarly wrote, were very low and mean, and their Improvements very small, or rather none at all in philosophick Matters. 'Tis not to be imagin'd that an entire Account of the Origin of the whole Frame of Nature, (the noblest and most sublime Theory the highest Philosopher could exercise his Thoughts upon,) should be within the reach of the *Jewish* Apprehensions. We do not find in our learned and inquisitive Age, such a ready Comprehension and Reception of Truths in Philosophy among the generality of Men; and 'tis so lately, that an easy Proposition of the Earth's Motions diurnal and annual, rais'd a mighty Dust, and was very difficultly embrac'd by even those who called themselves Philosophers, that from

such an Instance we may easily imagine how any natural Notions relating to the Constitution and Original of all the Bodies in the Universe must have been entertain'd among the rude and illiterate *Jews*, newly come from the *Egyptian* Bondage, and destitute of the very first Elements of natural Knowledge. Every one in the History of the Bible may with Ease observe, That the Abilities and Studies of the *Israelites* (as indeed 'tis true of most of them to this Day) were of another Nature and Size, than must here be suppos'd, if we bring in all the World into the *Mosaick* Creation. If an indifferent Stander-by, who had never read the first of *Genesis*, were to judge what a sort of *Κοσμοποιία* were to be given to so ignorant and unskilful a Nation; he could not, with common Prudence, suppose either that it ought to be perfectly philosophical, or include any more than the Senses and Capacities of the *Jews* could arrive at, the Earth with its Appurtenances, and the Heavens, so far as they were plainly therewith concern'd. Indeed, not only the *Jews*, but the generality of Mankind's Apprehensions always were, and still are much too narrow for any noble Discoveries relating to universal Nature; and a Chapter about *Algebra* might almost as suitably to Reason be recommended to them, as an Account of the true Origination of all the World. Nay, *de facto*, it appears, that *Moses* was so far from deeming his People capable of Understanding the entire System of Bodies remote and distant; that 'tis clear, he esteem'd it improper to say a word about the internal Constitution and Parts of our own Earth; contenting himself with what the Surface afforded, and what unavoidably came under the Notice of their Senses, as is too plain to be deny'd in the History before us.

And

And shall we after all this believe or imagine that 'twas fit and proper, nay, or barely possible, for *Moses* to give a full Account of the Beginning of the World, and impress a just, true and adequate *Idea* thereof on the Minds of the People! I believe 'twas so far from it, that still after all the Accommodation to the Senses and Capacities of Men, which he and the other holy Writers use on such Occasions; yet the mere Observation of the Truth of things forc'd them sometimes to speak what the others were not able rightly to comprehend; and they seem rather, in natural Truths, to have gone too high, than descended too low; considering the gross Ignorance of their *Readers*, in those Matters.

Those Expressions of Scripture concerning the roundness of the World; the Earth's being founded on the Seas, and established on the Floods; a Compass or Orb being set on the Face of the Deep; the stretching out of the Earth above the Waters, and its consisting out of the Water and in the Water; of most of which we shall take notice hereafter: Those Expressions, I say, are exactly accommodate to the real Constitution of the Earth, as will appear in due place; but were, 'tis plain, very much mistaken afterward. Men generally took the Earth to be round, not as a Sphere, but a Circle; and suppos'd the Abyss, on which 'twas founded, to be the Ocean or great Sea, on whose Surface, in their opinion, it swam; and which on every side encompass'd it as far as the very Firmament gave leave, and the Ends of the Heaven would permit. That Continent we inhabit, was taken for the whole World; and its Middle or Center, imagin'd by most Men to be near the Place where they themselves dwelt. The

...
Vid. *Pha-*
nom. 13,
infra.

Horizon or Sea, and the Firmament, were believ'd to bound and terminate each other. The Sun, Moon, and Stars, were suppos'd at their descending below the Horizon, to be immers'd in the Sea; and at their ascending above it, to emerge out of it again. How ridiculous these Conceits are, every one will easily judge, who has but a small Insight into the System of the World; and how little they are countenanc'd by the Texts before referr'd to, 'twere easy to shew; but 'tis plain, they were so apply'd, and the Particulars pretty handsomely adjusted to Mens own Fancies on these *Hypotheses*.

When therefore we observe the Expressions of Scripture about the Constitution of our own Earth to have been so miserably misunderstood and misapply'd, we may easily collect what Fate any Notions of a sublimer Nature, concerning the Heavens, and the whole System of Beings, must have undergone amongst them. If the Apostles, in a more learned Age had begun their Preaching with the requiring Mens Belief to the Motion of the Earth, the Being of *Antipodes*, or any other such *Paradox* in Philosophy, nay, or given them a true and rational Scheme of the Origin of the Universe in all its Parts, we may soon guess at the Reception they would have met with, and at the Success of their Ministry. This Procedure could contribute nothing to their Design, neither could the People be made to understand and believe such strange Notions. And as in this case, every one will allow the absurdity of such a Method, and never imagine it probable that the Apostles could make use of it; so ought we, by only changing the Scene, to conclude, *à priori*, that 'tis highly unlikely that *Moses* would take such a Course; and that, unless the Words of the History were too
express

exprefs and plain to be deny'd, 'tis extremely improbable fo great a Lawgiver (to go no farther) would extend his *Cosmogony* beyond the *Ends* of his writing it, and the *Abilities* of thofe who fhould read it; or in other words, 'tis extremely improbable that the *Mosaick* Creation fhould be of any other Nature or Extent than the Proposition we are upon does affert.

IX. Laftly, I prove the *Mosaick* Creation extends no farther than this Earth and its Appendages, becaufe the Deluge and Conflagration, whole Boundaries are the fame with that of the *Mosaick* Creation extend no farther.

I fhall here take it for granted, that the Limits here affign'd to the Deluge and Conflagration, are juft; it being certain as to the former, and I think more than probable as to the latter; and only quote a place or two to prove the fix Days Work to be of the very fame, and no larger Extent than thofe are, and leave the whole to the Judgment of the Reader. *There fhall come in the 2 Pet. iii. . . .*
laft days scoffers, walking after their own lufts, and 3. &c.
faying, Where is the promise of his coming? for fince the fathers fell afleep, all things continue as they were from the beginning of the creation. For this they wil-
lingly are ignorant of, that by the word of God the heavens were of old, and the earth ftanding out of the water and in the water, whereby the world that then was, being overflowed with water, per-
ished: But the heavens and the earth which are now, by the fame word are kept in ftore, referved unto fire againft the day of judgment, and perdition of ungodly men. The day of the Lord will come y 10.
as a thief in the night, in the which the heavens fhall pafs away with a great noife, and the elements fhall melt with fervent heat; the earth

also, and the works that are therein, shall be burnt
 † 12, 13. up. In the day of God the heavens being on fire
 shall be dissolved, and the elements shall melt with
 fervent heat. Nevertheless we, according to his
 promise, look for a new heaven, and a new earth,
 wherein dwelleth righteousness.

Heb. i. 10, Thou, Lord, in the beginning hast laid the foun-
 11, 12. dation of the earth, and the heavens are the works
 of thine hands: They shall perish, but thou remain-
 est; and they all shall wax old as doth a garment;
 and as a vesture shalt thou fold them up, and they
 shall be changed.

I have now finish'd all those Arguments which
 to me are fully satisfactory, and I think prove
 beyond rational contradiction, that not the vast
 Universe, but the Earth alone, with its Depen-
 dencies, are the proper Subject of the six Days
 Creation: And that the *Mosaick* History is not
 a nice, exact, and philosophick Account of the
 several Steps and Operations of the whole; but
 such an historical Relation of each Mutation of
 the Chaos, each successive Day, as the Journal
 of a Person on the Face of the Earth all that
 while would naturally have contained. The Sum
 of all is this:

... (1.) The very Words and Coherence of *Moses*
 himself require such a Construction.

(2.) The Words *Creating, Making, or Framing*
 things here used, are commonly of no larger Im-
 portance than this Proposition allows.

(3.) The *World, or Heaven and Earth*, the
 Objects of this Creation, are alike frequently
 restrain'd to the sublunary World, the Air and
 Earth.

(4.) The *Chaos*, that known Fund and Semi-
 nary of the six Days Creation, extended no far-
 ther.

(5.) On

(5.) On the contrary Supposition, the *Time* of the Creation of each Body is extremely disproportionate to the Work it self.

(6.) On the same Supposition there is an intolerable Disorder, *Disproportion*, and Confusion in the Works themselves.

(7.) The final Cause of the six Days Creation is the sole *Advantage of Mankind*, the Inhabitant of the Earth.

(8.) Neither the *Intention* of the Author, nor the *Capacity* of the Readers require or could bear any other Account of the Origin of Things.

(9.) Lastly, Neither the *Deluge* nor *Conflagration*, whose Extent appears commensurate to that of this *Creation*, are of any larger Compass than is here assign'd.

Upon this View of the whole Matter give me Leave to say, that to make the universal Frame of Nature concern'd in the particular Fates and Revolutions of our Earth, is, at this time of day, to demonstrate either very mean Thoughts of the Ends of the Divine Workmanship, and of the Effects thereof in the World; or else very proud and extravagant Conceits of our own Worth and Dignity; and at best argues a narrow, ignoble and unphilosophical Soul. 'Tis much such another wise and rational Notion, as it would be to suppose that the whole terraqueous Globe, with all its Parts and Dependencies, all its Furniture and Productions, was alike concern'd in the *Fates* and *Revolutions* (pardon the Expressions) of one single Fly or Worm belonging to it. And we may e'en as fairly allow the entire Dependence of this sublunary World on the Fortune of such a single *animalculum*; that on its peeping into the World, the whole Earth must arise out of nothing to afford it a resting Place; while
it

it was growing, and continued in its prime, all things below must spring and flourish, rejoice and look gay; on its decay, all things must put on a mournful Countenance; and on its destruction, universal Nature here beneath must expire together, and return to its primitive Nothing. This Representation will, I imagine, seem bold and extravagant; but 'twill be hard to prove it so. And I may appeal to Astronomy whether the Earth can be shewn to bear as considerable a proportion to the Universe, as such a poor *animalculum* does certainly bear to it.

I would not by this, or any thing else I have heretofore said in this Discourse, be so far mistaken, as to be believ'd prone to depreciate and debase Mankind; or to put a slight on all those Works of Nature and Providence which are subservient to it. Neither do I deny that in some sense all the visible World, Heaven and Earth, are ordain'd for our Use and Advantage; I fully believe that we are the Creatures of God, of whom he has a tender Regard, and over whom he exercises a constant, a special Care and Providence. As I look upon the Souls of Men, in their proper and primitive Perfection, when they came out of their Maker's Hand, to be noble, to be glorious, to be exalted Beings, and perhaps in Capacities or Faculties, in Dignity or Happiness, not inferior to the Angelick Order; so I also most undoubtedly believe what our Saviour affirms of good Mens State hereafter, that they shall be Ἰσάγγελοι *equal to the Angels*; and Ὅτιοι τῷ Θεῷ *Children of God himself*. While I am persuaded that the Creation of Man was not effected without the Concurrence and joint Consultation of the Father and Son; nor his Redemption without the Acceptance of the Father, the Sacrifice and Death of the Son incarnate;

and

Luke xx.
36.

and the Sanctification and Operation of the Holy Spirit: while I am persuaded that the Divine Λόγος Θεάνθρωπος has ever since the Fall of *Adam* been solicitous about our Reconciliation to God his Father, and made it his constant Business, even before as well as since his Incarnation, to mediate for us, and take care of our eternal Happiness: while I believe that by the new Covenant good Men, even in this imperfect State, are esteem'd *Heirs of God, joint-heirs with Christ*, and denominated the *Brethren* and *Friends* of their glorious Redeemer: while I do not doubt but our human Nature is now, in some sense, in the Person of our Blessed Saviour, in Heaven; and there on account of the Union with the Divine Λόγος , and as a Reward of that Obedience and Suffering he underwent for us on Earth, advanc'd above the most exalted intellectual Orders, at the right Hand of the Majesty on high: while I expect the same Person in the Glory of the Father, coming to judge the World in Righteousness; and Mankind, after that final Doom, to be Partaker of everlasting Joy or Misery according to their Behaviour here on Earth. While, I say, I believe all this, as I most sincerely do, I can be under no Temptation of looking with Contempt upon, or of entertaining a mean Opinion of Mankind, or of those Systems of Nature and Providence relating to it. Yet, all this notwithstanding, I think that Opinion I am now exposing, deserves no other Character than I have before given of it.

Tho' I look upon Mankind as one Species of very noble and glorious Creatures, yet I suppose it but *One*; and that there may be Millions of others at the least not inferior to him. Tho' I believe human Nature, when innocent and perfect, at that height of Purity and Felicity which
it

it once had, and by the Christian Dispensation may be again advanc'd to, as so considerable and exalted a Species of Beings; yet withal I look upon it at present as under a very different Character. We are all now in a deprav'd, a sinful, and so in a low, a miserable State. We have by our own wilful Rebellion and Disobedience, made it necessary for God to place us in a short, a vicious, in an uneasy and vexatious World; where at present we are under a sort of Confinement; in a Place of Trial and Probation; and through a doleful Wilderness must make our way to the Land of *Canaan*. *Quisque suos patimur manes*. We here feel the sad Effects and Punishments of former Sins. We are left to struggle with great Difficulties, abide many Assaults, and undergo severe Agonies, e'er we must expect to recover our native Dignity, to retrieve our ancient Felicity again; *Exinde per amplum Mittimur Elysium, & reduces læta arva tenemus*.

1 Cor. xv.

50.

Joh. xviii.

36.

As *flesh and blood cannot inherit the kingdom of God, so that Kingdom is not of this World*. I see no Reason to esteem the present Condition of Mortality as at all considerable *in it self*, (tho' in its *Consequences* it extremely be so) in comparison of the future Periods of our Beings; and therefore without believing the Earth one of the greatest or noblest Globes in the World, I can suppose it a very proper and suitable Habitation for us at present: most wisely contriv'd, (as it certainly is;) and its Furniture peculiarly and wonderfully adapted to our Needs, Capacities and Operations. I acknowledge that Providence has so constituted our Earth that we receive some Advantages from all, and very great ones from some other Parts of the external and visible World. All which were in the original Creation of things both foreseen and foredesign'd by God, and so may not im-

properly

properly be so far said to have been made for our Use, and appointed to serve our Necessities. I do not think that those Systems of the Universe we here speak of, are ever a whit the less useful to us, or the Benefits we reap from them ever the less in themselves, or unworthy of our Notice and Observation, our Admiration and Gratitude to God, because they also are subservient to other noble Purposes, and are by Divine Providence made use of in several great Designs over and above those Advantages we are able to take notice of, or can our selves enjoy from them. I cannot imagine that God is peculiarly fond of any particular Parts of the material Creation, or any more a *Respecter of some Inanimate Bodies*, than of *Persons*. He no doubt equally makes use of them all, according to their several Kinds and Capacities, in the Service of the various Species of intelligent Creatures, and in the bringing about the great Periods of Nature, and the Decrees of Heaven; which as they are in great measure unknown to us, so may they regard rational Beings very different and remote from us and our Concerns.

If we duly reflect on the infinite Nature, and unlimited Perfections of the Divine Being, the Creator and Original of all Things; as well as on the Number, Vastness, and Glory of those his Works which are within our View, we shall see Reason to confess, there may be Millions of nobler intellectual Beings interposed between Man and God; and the whole World might be more reasonably suppos'd made at the Creation, and for the sole Use of any one Species of those, than of Mankind. If therefore we be unwilling to be our selves excluded from a Share in the Intentions and Designs of Heaven, let us not exclude any other rational Creatures from the same; but be willing to suppose

pose that as this Earth was form'd in six Days for the Sake of Man, so were the rest of the heavenly Bodies, form'd at other proper Times, for the Sake of other of God's Creatures; for whom Providence ought to be allow'd to have taken a proportionable Care, and made a suitable Provision, as we our selves find has been done with regard to us and our Affairs. Let us learn humble and modest Sentiments of our selves, from the Contemplation of the Immensity of the Works of God in the World. Which useful Lesson the holy Psalmist would, by his own Example, teach us; with whose natural and pious Reflection in this very case, I shall conclude this whole Discourse. *When I consider thy Heavens, the work of thy fingers, the Moon and the Stars which thou hast ordained; Lord! what is Man, that thou art mindful of him! And the Son of Man, that thou visitest him! O Lord our Lord! How excellent is thy name in all the Earth!*

Psal. viii.

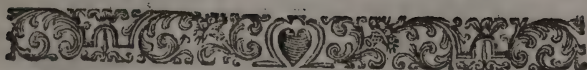
3. 4.

† ult.



POSTULATA.


- I. **T**HE Obvious or Literal Sense of Scripture is the True and Real one, where no evident Reason can be given to the contrary.
- II. That which is clearly accountable in a natural way, is not, without Reason, to be ascrib'd to a Miraculous Power.
- III. What Ancient Tradition asserts of the Constitution of Nature, or of the Origin and Primitive States of the World, is to be allow'd for True, where 'tis fully agreeable to Scripture, Reason, and Philosophy.



A
NEW THEORY
OF THE
EARTH.

BOOK I.

LEMMA.

I.  ALL Bodies will persevere for ever in that State, whether of Rest or Motion, in which they once are, if no other Force or Impediment act upon them, or suffer by them.

II. All Motion is of it self rectilinear, and with the same constant uniform Celerity, if no other external Cause disturb it.

Corollary 1. 'Tis evident from these two Propositions, that Matter is entirely a passive Substance.

Coroll. 2. No Spontaneous Motion or Action can be the Effect of mere Matter.

Coroll. 3. The Soul of Man, whose least Power seems to be that of Spontaneous Motion, is incorporeal: Which is also a necessary Consequence of the first Co-

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rollary;

rollary; for if Matter be perfectly a passive Thing, the Soul, which is so active a Being, cannot be material.

Coroll. 4. *The Brute Creatures giving all possible Demonstrations of Spontaneous Motion, and of a Principle of Action, cannot reasonably be suppos'd merely Corporeal Machines.*

Scholium. These two last Corollaries are only demonstrative to those, who with me own the Motions and Actions of the Body, properly produc'd and caus'd by the Soul. But as for those Metaphysical and Abstract Reasoners, who think God the immediate Author of all those Motions, and the Soul only the *occasional Cause* with *Malbranch*, and his Followers; 'tis not easy upon any Subject, but purely Mathematical ones, to produce any thing which they will own for a Demonstration: And therefore I shall not attempt to demonstrate these Corollaries to them. And indeed I think I need not, for if I be not mistaken they all own the Immateriality of the Soul of Man, whatever some of them may dream of the Brutes being nothing but Corporeal Machines, and without any Sensation at all.

III. All those single Corpuscles of which Bodies are compos'd, do attract other single Corpuscles of which other Bodies are compos'd, and are alike mutually attracted by them. If this Affection of the Parts of Bodies be consider'd with respect to those towards which the Motion is, 'tis call'd *Attraction*, and they are said to draw all others. But if it be consider'd with respect to those which are mov'd, 'tis call'd *Gravitation*, or a *Tendency* in them towards others. Thus in Magnetism we imagine a Power of Attraction belonging to the Loadstone; and in the Iron a Tendency, or (as I may call it, tho' somewhat improperly)

Gravi-

Gravitation towards it. Tho' indeed, by the way, the Force or Affection being found to be mutual and equal on both Sides, the Terms might justly be so too; and a Loadstone might as properly be said to tend or *gravitate* towards the Iron, or Iron to *attract* the Loadstone, as the contrary; just as 'tis in the Point before us. This however will serve for an Illustration, and explain our Meaning in the present Case, where all the Parts of Bodies are endued with such a mutual Gravitation and Attraction with respect to all others.

Scholium. That no Prejudice nor Misunderstanding may arise, 'tis to be observ'd, That when we use the Terms of Attraction or Gravitation, we do not thereby determine the Physical Cause or Seat of any Effects, as if some innate Power or *occult Quality* were to be suppos'd in Bodies, (as will appear presently;) but only use such familiar Terms, whereby our Meaning may be easily understood, and the Effects of Nature explain'd, even where the last and proper efficient Cause is not mechanically assignable. Thus we do and may say, as before, that the Loadstone attracts the Iron, or the Iron tends or gravitates to the Loadstone: not ascribing thereby any proper or positive Quality or Power to these Bodies, but for Ease of Expression, and for supplying what we cannot otherwise readily explain relating to them. Thus also we commonly say, that Stones are heavy, and tend towards the Centre of the Earth; and the Expressions, rightly understood, are true and natural: Tho' perhaps in both Cases the real Cause of those Effects which we ascribe to such an Attraction, Tendency, or Gravitation, is external, and some continual Impulse from without, not any inherent Power really existent within, is the Original of all. But in such Cases,

ses, where the true Agent is invisible or unknown, we must have Leave to use those Terms which the Matter will bear, or Custom has render'd familiar; without which, uneasy and troublesome Circumlocutions will be unavoidable; especially, seeing that no Error can hereby creep into our Reasonings, because 'tis evident, that all the Effects of Nature are exactly the very same in the World, and not otherwise; which they certainly would and must be, if Bodies did really and properly, by their own inherent Virtue or Quality, attract, and were attracted by all others.

IV. This Affection of mutual Attraction or Gravitation is universal in *Extent*; all Bodies in the whole World, as far as we have any Means of knowing, wheresoever they are plac'd, being in common subject thereto, and concern'd therein.

V. This Affection is also universal as to the *Kinds* of its Objects; it belonging equally to all the Parts of Matter, of what Sort or Form, in what Figure or Condition soever they are: The Difference of Bodies as to Texture and Composition, Fluidity and Firmness, Motion and Rest, Bigness and Subtilty, or any other such mutable Qualities, not in the least diminishing the Influence thereof.

VI. This Affection is also universal and equable as to *Time*, without all manner of Intermision; without any Increase or Diminution in different Ages.

VII. The Quantity of the Force of Attraction at equal Distances is exactly proportionable to the Quantity of Matter in the attracting Body; being in reality nothing but the Result or Sum of the united Forces of all those single Particles of which 'tis compos'd. Thus, if *A* be double to,

i. e.

i. e. has twice as much matter as *B*; *A* will have a double Force of Attraction also, at equal Distances from their Centres respectively. If *A* represent the Earth, *B* the Moon; if *B* contain but the fortieth Part of the Matter in *A*, (as it ^{*Lem. 36.*} really does contain little more;) and a Globe or ^{*infra.*} Ball were plac'd at the same Distance from the Centre of *B*, at which another equal to it were from that of *A*, it would be but the fortieth Part so heavy towards *B*, as the other were towards *A*. ...

VIII. This mutual Tendency of Bodies is greater or less, according as the Bodies themselves are nearer to, or farther from each other. The same Body more forcibly attracting those which are near, than those which are farther off. So that Stone or Pillar which is with us very heavy, would be comparatively very light, if it were as far distant from us as the Moon.

IX. The Proportion of the Increase and Decrease of this Gravity of Bodies in their Approach to, or Recess from each other, is neither that of similar Lines nor Solids, but of Superficies or Plains: The Force of Attraction in several Distances being *reciprocally in a duplicate Proportion* thereof. Thus when the same Body, without the Surface of the Earth, is twice as near its Centre as it was before, 'tis four times as heavy; when thrice as near, 'tis nine times as heavy; when four times as near, 'tis sixteen times as heavy as before. In like manner, the same Strength which were able to sustain a Body of one hundred Weight here, would at twice our Distance from the Earth's Centre, be equally able to sustain four hundred Weight; at three times our Distance, nine hundred Weight; at four times our Distance, sixteen hundred Weight,

and so, *in infinitum*, at all other Distances. For as the Squares of the Distances increase, so does the Power of Attraction decrease; and as the Squares of the Distances decrease, so does the Power of Attraction at the same time increase proportionably; as will be prov'd presently from the known *Phænomena* of Astronomy.

Vid. Bentley, Sermon. 7. P. 26, &c.

Corollary 1. *From the Comparison of the two first Propositions with the seven last, 'tis evident, That this universal Force of mutual Attraction or Gravitation of Bodies is not a Result from the Nature of Matter, which being circumscrib'd within its own Bounds, being incapable of acting at a Distance, and besides being entirely passive in its very Essence, cannot possibly draw others, or tend towards them of it self.*

Coroll. 2. *This universal Force of Gravitation being so plainly above, besides, and contrary to the Nature of Matter; on the foremention'd Accounts must be the Effect of a Divine Power and Efficacy, which governs the whole World, and which is absolutely necessary to its Preservation.*

Coroll. 3. *Since the Divine Power is inseparable from the Divine Essence, 'tis evident, the latter is Omnipresent as well as the former; and every where equally diffus'd through the Universe; and that therefore in God we properly, live, move, and have our Being.*

Coroll. 4. *The Divine Nature is Incorporeal and Spiritual, as being equally present, and equally powerful in the midst of the material World, and its most solid Parts, as in those immense Spaces which every where distinguish the Parts, and surround the Limits of it.*

Coroll. 5. *The Providence of God in the Natural World is not merely a Conservation of its Being, or a*
Non-

Non-annihilation thereof; but a constant, uniform, active Influence or Energy in all the Operations done in it; the very same which was exerted in the original Impression of those Laws of Motion on which it depends. The two first Propositions, 'tis true, seem to require only a Continuation of Existence, without any new or continual Action; but the seven last plainly require more; and no less than I am here pleading for. So that if we should suppose God Almighty to withdraw or suspend this his actual Efficacy and Influence on all the Bodies in the World, tho' he preserv'd their Being; the whole would immediately be dissolv'd; and each of the Heavenly Bodies be crumbled into Dust; the single Atoms commencing their several Motions in such several strait Lines, according to which the Projectile Motion chanc'd to be at the Instant when the Divine Influence, (the Cause of Gravitation, and all such other Affections of Matter) was suspended or withdrawn.

Coroll. 6. Mechanical Philosophy, which relies chiefly on the Power of Gravity, is, if rightly understood, so far from leading to Atheism, that it solely depends on, supposes, and demonstrates the Being and Providence of God; and its Study by Consequence is the most serviceable to Religion of all others.

Coroll. 7. The Epicureans, who endeavour'd to cast the Belief of a Providence at least, if not of a Deity, out of the World by their Atomical or Mechanical Philosophy, very foolishly misunderstood and abus'd their own Principles; which in reality, when rightly comprehended, do with the greatest Evidence and Conviction establish them both, beyond all other whatsoever.

Coroll. 8. There is no such Ethereal Substance, or Subtil Matter, pervading the Pores of Bodies, which being it self free from the Law of Gravity, or endu'd with a less Proportion thereof, might be ima-

gin'd to be the Cause of it in other Bodies, or the Means of any other Effects in the World.

Coroll. 9. *A Vacuum, or Space distinct from Matter, is necessary to be admitted. For were the World equally full every where, since all Matter is equally heavy in Proportion to its Quantity, there could not possibly be any Difference in the Specifick Gravity of Bodies; it being on the Hypothesis of a Plenum impossible that a Cube of Gold should be heavier than an equal Cube of Air, and its contained subtil Matter together; and by Consequence equally impossible that the former should over-balance or descend in the latter, which yet all Experience shews it really does. So that a Plenum is so far from accounting for the Phænomenon of Gravity, as some would have it, that it utterly subverts the Possibility of it; and while the last is evident, the first must needs be indefensible.*

X. From the uniform Projectile Motion of Bodies in straight Lines, and the Universal Power of Attraction or Gravitation, the curvilinear Motion of all the Heavenly Bodies does arise. If a Body, as B, be moving uniformly along the Line DC, from D to C; and another Body A be present, this latter Body A must draw the former B from its straight Line DC, and by doing so continually, while at the same time the Body B retains its Projectile Force along a straight Line in every Point of its Course, must make the Line of its real Motion a bent one, and change its rectilinear into a curvilinear Trajectory.

Τὴν δὲ Ἀναξαγόρου εἰς πᾶν
ὡς ὅλθ' ὁ κέντρον ἐκ λίθων
συγκείμετο· τῇ σφαιρῇ δὲ πε-
ριελύσσει· καὶ ἀνε-
στῆκα κατενέχεται. Dixit Anaxagoras Cœlum omne ex lapidibus esse
compositum, ac vehementi circuitu constare, alias remissione lapsurum.
Laertius, Lib. II. Segm. 12.

Coroll. Hence we may learn what is that conatus recedendi a centro motus in revolving Bodies, and

and in what Sense 'tis to be understood. For since, as we have already seen, all Bodies have a *Vis centripeta*, or Propension towards one another, 'tis impossible they should of themselves, in as proper a manner, have a contrary Propension, or *Vis centrifuga*, an Endeavour of avoiding one another, (if these improper Terms will be allow'd me.) The true Meaning therefore of this Attempt or Endeavour to get farther off the Centre of Motion is only this, That all Bodies being purely Passive, and so incapable of altering their uniform Motion along those strait Lines, or Tangents to their Curves, in which they are every Moment, still tend onwards in the same Lines, and retain their Propension or Effort towards that rectilinear Motion all the Time they are obliged to move in Curves; and consequently at every Point of their Course, endeavour to fly off by their Tangents. Now the Parts of the Tangent to which this Endeavour is, being farther from the Centre than those of the Curves to which the Bodies are actually forc'd, an Attempt to go on in the Tangent may be, and is styl'd an Attempt to go farther off or recede from that Centre; tho' from no other Affection than that of Inactivity, or of persevering in a rectilinear Motion. So that tho' the *Vis centripeta*, or Power of Gravitation be an active and positive Force, continually renew'd and impress'd on Bodies; the *Vis centrifuga*, or *conatus recedendi à centro motûs*, is not so, but the mere Consequent and Result from their Inactivity. This is evident in Bodies revolving in Ellipses about one of the Foci, in their Descent towards it; where the Tangent being oblique to the Radius, or Line, from the Point of Contact to the Focus, this very *conatus recedendi à centro motûs*, by urging it along the Tangent, will for some Time make it approach nearer to the Focus; (tho' not so much nearer as by its revolving in the Ellipsis it self;) as may be
seen

Schem. 1. *seen in the Scheme, if a Body at B were moving towards L about the Focus H. And this Explication is confirm'd by all Experience. For let a Stone be let loose from the Sling, or any revolving Body be disengag'd from the Force which retain'd it in its Curve, and it will not properly go from the Center, but only pass along the Tangent in which it was moving, as if there were no such Centre near it at all.*

Fig. 6.

Fig. 3. XI. A Rectilinear or Projectile Motion of the Planets along the Tangents to their Orbits, (which when once begun, always uniformly continues,) join'd or compounded with their Gravitation to the Sun, in the common Centre, or rather *Focus* of our System, is the Original of all the Planetary Revolutions about him. Thus if *Jupiter*, for Instance, represented by B, were moving uniformly along the Line DC, from D towards C; if the Sun A were absent, the Planet would pass on straight from B to C, with the same Velocity with which it had come from D to B. But if upon its Arrival at the Point B, the Sun in the Centre or *Focus* A begin to affect it, the Planet, by the Sun's Attraction, must be drawn from a rectilinear to a curvilinear Course; and be oblig'd, if the Sun's Power be great enough, compar'd with the Planet's Velocity to revolve about him, and that, the attractive Force always continuing, for ever after. The Case is just the same as if B were a Stone in a Sling, A the Hand of the Slinger, (by the Help of the Strings united together, and represented by the Line AB,) whirling it round continually. For as the Stone at its coming to the Point B, were it let loose and left to it self, would fly off in the straight Line or Tangent BC, yet by Force is still retain'd at an equal Distance from the Hand of the Slinger, and compell'd to revolve in a kind of Circle; so 'tis here.

The

The Attraction of the Sun in the common Centre or *Focus* compels all the Planets, which of themselves would pass along their several Tangents, to revolve about it self, and describe their several curvilinear Orbits. And the Case is the same in the secondary Planets with respect to their primary ones, about which they revolve in the same manner as they all both primary and secondary revolve about the Sun, in the common Centre or *Focus* of the entire System.

Coroll. 1. Hence 'tis manifest, that the Law of universal Attraction once establish'd, unless the Divine Power had put the Planets into a suitable Motion in right Lines, they must soon have been drawn downwards, and fallen into the Sun: And still, if their Motions should be entirely stopp'd and cease, the same must happen; and they must not only be incapable of those noble Uses to which they are now subservient, but utterly perish in the Violence of the Sun's scorching Heat. The preventing of which therefore ought justly to be attributed to the Wisdom and Power of God in the Constitution of the World.

Coroll. 2. If the World be limited and finite in its Extent, 'tis so in its Time also; and so vice versâ, if Eternal in its Time, 'tis Infinite also in its Extent. For since all Matter (as far as we have any Means of knowing, and so in Reason all Matter whatsoever) is endu'd alike with a Power of Attraction; and must all thereby, without proper Motions along strait Lines, at last meet in the common Centre of Gravity of the whole; and since withal the other Systems of fix'd Stars, suppos'd here finite, retain their Site and Distance from each other, and thence appear not to have any projectile Motion along strait Lines to prevent the same; had the Frame of the World been Eternal, the Effect abovemention'd must have, innumerable Ages ago, really come to pass; and all the Matter
of

of the entire Universe compos'd one single dull and unmoveable Heap or Mass, in the common Centre of Gravity of the whole; which not having happen'd, demonstrates the Impossibility of the Eternity of the World, and the Necessity of admitting its Production in Time by the Power of God. Since therefore 'tis unreasonable to suppose the Material World truly unlimited in Extent, 'tis necessary to suppose it no more unlimited in Duration also. And this Reasoning is unavoidable, unless we allow the most invulnerable and constant Property of Matter in our System to be peculiar to it, and so to be a voluntary Constitution of God Almighty; or at least that a miraculous Providence does hinder the foremention'd Effect continually. So that upon the whole, as the very

Serm. 7
p. 37, 38. *Learned Dr. Bentley has observed, either the Divine Power in Creating, or peculiar Providence in Governing the Frame of Nature, is on these undoubted Principles for ever establish'd.*

XII. When the Projectile Motion of the Planets is in its Direction perpendicular to a Line from the Sun, and in its Degree of Velocity, so nicely adapted and contemper'd to the Quantity of the Sun's Attraction there, that neither can overcome the other, (the Force of Gravitation towards the Sun, and the Celerity of the Planets proper Motions being properly in *Æquilibrio*,) the Orbits of such revolving Planets will be compleat Circles; themselves neither approaching to, nor receding from the Sun, the Centre of their Motions. And the Case is the same in the secondary Planets about their primary ones. Thus 'tis supposable, that the Velocity of all the Planets about the Sun, was exactly accommodate originally to his Power of Attraction, and that their primitive Orbits were perfect Circles; from which at this Day they do not mightily differ. Thus, however, *Jupiter's*
four

four Satellites or little Moons have their Motions so exactly proportion'd to their Gravitation to him, that their Orbits, as far as the most nice Observations can judge, are perfect Circles; they keeping at an equal Distance from his Centre in all their Points of their Courses about him.

XIII. When the Projectile Motion is not adapted to, but is either too swift or too slow for the Attraction towards the Central Body, the Orbits describ'd will be *Ellipses*; and in the former Case, when the Projectile Motion is too swift, the Orbit will be bigger than the Circle before-mention'd; and the nearer *Focus* of the *Ellipsis* will be coincident with the Central Body; and in the latter Case, the Orbit will be less than the Circle, and the farther *Focus* of the *Ellipsis* will be coincident with that Central Body. Thus if the Celerity of Fig. 3. B, be exactly correspondent to the attractive Force of the Central Body A, neither will prevail, and the Body, preserving an equal Distance from the Centre, will describe the Circle B e E b. If the Celerity be greater, it will overcome the Attraction, and cast it self farther off the Centre for some Time, and so revolve about it in the larger *Ellipsis* B H F G; the Central Body, possessing that *Focus* A, which is nearest the Point B, where the Attraction began. But if the Celerity be smaller, the Attraction of the Central Body A, will be too hard for it, will force it for some Time to come nearer, and to describe the lesser *Ellipsis* B K L I; the Central Body possessing that *Focus* A which is farthest from the Point B, where the Attraction began; as will be very plain from the Consideration of the Figure relating hereto.

Scholium. 'Tis indeed possible that the Celerity of Bodies may be so great, compar'd with the Force of Attraction to the Central Body, as to cast them off

off with such Violence, that the Attraction will never be able to break them round, or make them revolve about it: In which Case, the Orbits describ'd will be one of the other Conick Sections, either *Parabola's* or *Hyperbola's*; according to the less or greater Violence with which the Bodies are thrown; and the Central Body will possess the *Focus* of such a Figure. But no *Phænomena* of Nature persuading us that *de facto* any of the heavenly Bodies do describe either of those Lines, (tho' Comets *Ellipses* come near to *Parabola's*, of which hereafter;) I shall not farther insist upon them here. For if what has been said of *Ellipses* has been well understood, the rest can have no great Difficulty in it.

XIV. Several Bodies moving about the same Central one, tho' their primitive Velocity were equal, and Direction alike; yet if they be at different Distances from it, they will describe Figures of different Species about it. For since that determinate Degree of Velocity, which at one Distance were just commensurate to the Central Bodies Attraction, and so would produce a circular Orbit, must at a farther Distance be too hard for it, by reason of the Diminution of the Attraction there; an *Elliptical* Orbit must be describ'd; whose nearer *Focus* would be coincident with the Central Body. In like manner, if the same determinate Degree of Velocity were at a nearer Distance, where the Central Attraction is augmented, it would be too little for the same; and an *Elliptical* Orbit must be describ'd, whose farther *Focus* would be coincident with the Central Body. This cannot be difficult, if what has been hitherto said have been rightly apprehended. For since the *Species* of the Planetary Orbits depend solely on the Proportion between the Attraction towards the Central Body, and the Velocity of the Projectile Motion;

as that Proportion remaining at any Distance whatsoever, the Bigness of the Orbits will be various, but the *Species* the same; so when that Proportion is chang'd, the *Species* of the Figures must be chang'd also: Which being done, in a given Velocity, by the various Force of Attraction in several Distances from the Centre, as well as by the various Velocity, at a given Distance, of which before; 'tis evident the *Species* of the Orbits will be different in this, as well as in the former Case.

Coroll. *The greater Disproportion there is between the Quantity of Attraction, and the Velocity of the revolving Bodies, in the Circumstances mention'd in the two last Propositions, the farther from a Circular, and the more Oblong and Eccentric will the Orbits describ'd be. And the greater Approach to Correspondence there is, the nearer to Circular, and the less Oblong and Eccentric will the same Orbits be.*

XV. The circular Orbits of Planets depend not only on the exact Adjustment of the Projectile Velocity to the attractive Power of the Sun, but upon the Direction of the same Projectile Motion, at the original Commencing of the Attraction. Thus where the Planet is in its own Tangent, neither Ascending nor Descending, and the Angle preceding Fig. 3. CBA is a right one; which we have hitherto suppos'd; from the Correspondence of the Velocity to the Attraction, the Orbits will be perfect Circles. Otherwise, when the Direction of the Motion is oblique, in any measure ascending from, or descending to the Central Body, and the preceding Angle CBA obtuse or acute, the Planet, tho' its Velocity were exactly adapted to the Attraction of the Central Body, would revolve in an *Ellipsis*; and the Point B, where the Attraction began, would be the End of the lesser *Axis* thereof. All which will become easier by what we shall

shall presently come to explain of that Figure.

Vid. Bentley, Ser. 8. Coroll. From these four last Propositions, compar'd with the present System of the Planetary World, 'tis obvious to take notice of the wise and careful Providence of God, and his most accurate Contrivance in the Disposal and Regulation of the whole: Whereby the primary Velocity of the Planets, their several Distances from the Central Bodies, and the original Direction of their Motions, have been each so nicely adjusted and adapted to the Force of Attraction every where, that all the Orbits of the Planets became thereby either truly circular, or not very much different from the same. Which Remark will appear the more just, and considerable, if we reflect on the infinitely different Degrees of Velocity, and oblique Direction; with the immensely various Distances from the Central Bodies; equally possible with those which were so fitly pitch'd upon; and observe to what noble and valuable Uses these Bodies are now subservient, which, without the foremention'd Exactness of Contrivance in each Particular, could not have been provided for. All which demonstrate the great Necessity of interesting the Divine Providence; and the Worthiness of its so careful Interposition in such Cases.

Scholium. In order to the easier Apprehension of the Motions of the Celestial Bodies, and of those Things already said, or to be said hereafter, relating to them, 'twill not be improper in this Place to give some Account of the Generation, Nature, and easy Properties of *Ellipses*; in which, (including the Circle, as is commonly done) all the Heavenly Bodies, (as far as we have hitherto Reason to believe) revolve perpetually; so far at least as will be directly subservient to our present Purpose, and give any Light to the following Theory. Take therefore, from the famous *Des Cartes*, this natural and obvious Description

Cartes.
Dioptr.
c. 8, &c.

or

or Delineation of an *Oval* or *Ellipsis*; which tho' familiar to the Gardiner and Joyner, is a very good one; and gives as just and compleat an *Idea* of it as any other whatsoever.

Take a small Cord or Packthread, which is very pliable, and yet not easily stretch'd beyond its natural Length; tye the two Ends together, by which means it will be a sort of round or circular Circumference mutable into all Figures. Let two Pins or Nails, H and I, be driven into a plain Board or Table; put the Cord or Packthread round the two Pins or Nails H and I, and with a Pencil or any such thing, (which, as it is drawn along, will make a small Stroke,) in your Hand, turn it round about the two Pins or Nails, as about a double Centre, till you return to the Point from whence you began. Thus if B be the Point where you begin the Delineation, continue it either way, along OFMKNEPD, or DPENKMFO, till you return to B again. By this means the Point of your Pencil will describe such a Curve as is here represented, and is call'd an *Ellipsis*. The Nature and Properties whereof, as far as at present we shall consider the same, are as follow.

(1.) The Species of the *Ellipsis* depends on the Proportion there is between the length of the Cord, and the distance of the two Centres H and I: And consequently, wherever that determinate Proportion is given, the Species is given also, tho' the Bigness and Capacity be chang'd; but where that Proportion is not given, as, the length of the Cord remaining, where the Distance of the Centres is chang'd; or, that Distance remaining, the length of the Cord is chang'd; or both are chang'd, but not in the same Proportion; in all these Cases the Species of the *Ellipsis* is different. Thus in particular, where the Distance of the Centres, or the

Line HI , is greater in proportion to the length of the Cord, there the *Ellipsis* is farther from; and where 'tis less, the *Ellipsis* is nearer to a Circle. All which is so obvious on a very little consideration of the Delineation, and Figure, as 'tis represented in the two different Schemes, that no more words need be us'd about it.

(2.) If in a considerable large Figure the two Points H and I be very near together, it will be scarce distinguishable from a Circle; and in any Figure if they be suppos'd to unite, and be coincident, the eccentrical Curve will become concentric; and the *Ellipsis* degenerate into a Circle; as perfect an one, as any drawn with a Pair of Compasses. Whence we see why a Circle is reckon'd among the *Ellipses*; and how it may be generated by a way very like that made use of in their Delineation.

(3.) As when the Points H and I are coincident, the *Ellipsis* loses its Eccentricity, and Denomination, and commences a Circle; so, on the other hand, if the Distance HI be indefinitely lengthened, while the difference between that distance and the length of the Cord, (equal to DH and IK , or double to one DH ; as, the Pencil at D , is easily perceiv'd,) remains the same, the *Ellipsis* will go thro' all Species; and at last become indefinitely oblong and eccentric; and one half of it, as FDE , will degenerate into the very same Figure we call a *Parabola*. For as all Degrees of Eccentricity make *Ellipses* of all Species; so no Degree of Eccentricity makes a Circle; and an indefinite or infinite Degree of it make a *Parabola*: which, tho' we have no necessity to consider it so distinctly in this place; (none of the heavenly Bodies, as far as we yet know, describing truly such a Line, as has been already observ'd;) yet
on

on account of the Comets Orbits, which are near-*Fig. 1.*
ly *Parabolical*, at least deserv'd our Notice; and
the first Figure will shew an Example of it.

(4.) An *Ellipsis* being describ'd about two Points, as a Circle about one, or those two united; hence may appear in some measure the Nature of these Points. They are indeed called the *Foci* or *Umbilici* of the Figure, but might not unfitly be nam'd the *Centres* thereof. And how naturally each of them bears much the same respect to the *Elliptick* Periphery, that the *Centre* does to the circular one, is partly obvious from the foregoing Delineation; and of this those who are acquainted with the *Conick Sections* cannot be ignorant. And accordingly, if the Name *Centre* had not by Custom in the *Ellipsis* been borrowed from the Circle on account of its Position, rather than some other Properties of it, and thence apply'd to the middle Point in the *Ellipsis*; it might very fitly, as has been before said, have been given to the two Points H and I, now styl'd the *Foci* or *Umbilici* thereof. And by the same reason, the corresponding single Points, going under the same Names in the *Parabola* and *Hyperbola*, would deserve and challenge the same Denomination. And this is so agreeable to the true System of the Planetary World, that in the new Astronomy, (and thence in these Papers) the Style is sometimes continued; and 'tis not unusual, I may add, not very improper, to say, that the Sun, the common *Focus* or *Umbilicus* of all the Celestial *Elliptick* Orbits, is in the *Centre* of our System, or possesses the *Centre* of the Planetary World.

(5.) Tho' all the Lines passing through the Centre in a Circle, being equal, are equally considerable; yet 'tis otherwise in the *Conick Sections*; where that Line through the *Focus* alone, which

cuts the principal *Axis* at right Angles, is remarkable above all the rest; and in very many Cases peculiarly considerable. This Line is styl'd the *Latus Rectum* or *Parameter*, and in the *Ellipsis* is, after the longer and shorter *Axis*, the third Proportional. Thus in the Figure before us, as DK is to EF, so is the same EF to OP or MN, the *Latus Rectum* or *Parameter* thereof, so famous with the Writers on the *Conick Sections*.

(6.) The Subtense of the Angle of Contact bd , parallel to the Distance from the *Focus* BH, at an equal perpendicular Distance from the Point of Contact B, if that Distance be suppos'd infinitely small, is in all Parts of the same *Ellipsis*, or other *Conick Section*, equal to it self. The Truth and Use of which Property is not yet sufficiently known.

(7.) If from any Point in the Circumference of an *Ellipsis* as B, Lines be drawn to each *Focus*, BH, BI; these two Lines taken together are always equal to themselves, and to the longer *Axis* KD: As the bare Delineation of the Figure does plainly manifest.

(8.) If the Angle made by the Lines to the *Foci* from any certain Point, HBI, be divided in the midst by the Line BA; the said Line BA will be perpendicular to the Tangent, or Curve at the Point of Contact; and so the Angles ABL, ABG, will be right ones, and equal to each other, as consequently will equal Parts of them, LBH, IBG.

(9.) A Line drawn from either *Focus* to the End of the lesser *Axis*, HE or IE, is equal to half the longer *Axis* CD or CK; as is evident by the last Particular but one. And the same Line is Arithmetically the middle Proportional between the greatest and least Distance from the said *Focus*.

Thus

Thus HE, for instance, is just so much longer than HD, as 'tis shorter than HK; the Difference in both cases being the *Eccentricity* HC or CI.

(10.) The Tangent of an *Ellipsis* LG is never perpendicular to a Line drawn from the *Focus*, Fig. 6.
Schem. 1. except at the two Points which terminate the longer *Axis* D and K. And if you imagine the Point of Contact B, with the Radius BH, and the Tangent LG, to move round the *Ellipsis* together, from B towards D; the preceding Angle, HBL, will, in the Descent from K by F to D, be an acute one; (its Acuteness increasing from K to F, and as much decreasing from F to D;) and in the Ascent from D by E to K an obtuse one; (its Obtuseness increasing from D to E; and as much decreasing from E to K:) In both Semi-revolutions arriving at Rightness at the Points D and K, the Ends of the longer *Axis* alone; as was here to be observ'd.

(11.) The *Area* of an *Ellipsis* is to that of a circumscrib'd Circle, (whose Diameter is equal to the others longer *Axis*,) as the shorter *Axis* of the *Ellipsis* is to the same longer *Axis* or Diameter.

(12.) If the Circumferences of a Circle, and of an *Ellipsis*, be equal; the *Area* of the Circle is the greater. It being known, that of all Figures, whose *Perimeters* are equal, the Circle is the most capacious.

(13.) If an *Ellipsis*, by becoming infinitely Eccentric, degenerate into a *Parabola*; the *Latus Rectum* or *Parameter* will be four times as long as the nearest Distance to the *Focus* thereof. Thus Fig. 1. rs is four times as long as Ht.

XVI. All Bodies which, together with a Projectile or uniform Motion along right Lines, are continually attracted or impell'd towards one certain Point or Centre, let the Attraction or Impulse

be of what Nature or Quantity soever, will always, (no other Force interposing) by a Line drawn from that Center to themselves, describe equal *Area's* in equal Times; and so proportionable *Area's* in proportionable Times; thro' all Parts of their Courses. Thus if the *Area* describ'd the first Minute were equal to a thousand square Feet; whether the Bodies came nearer, or went farther off, it would always in a Minute be equal to the same thousand square Feet; in two Minutes double, or two thousand; in three Minutes treble, or three thousand; in four Minutes quadruple, or four thousand; and so for ever proportionably. The Demonstration of this noble and exceeding useful *Theorem*, is both easy and pleasant: But that not being my present Business, I shall, as in the rest, refer the Reader to the Great Author himself for Satisfaction.

Sir Isaac
Newton's
Philos.
Nat. Prin-
cip. Math.
p. 37, 38,
39.

XVII. All Bodies, *vice versa*, which revolve in Curves; and by a Line drawn from themselves to a certain Point or Centre, describe *Area's* proportionable to the Times of Description, are attracted or impell'd continually towards that Point or Centre.

Corollary. Since therefore Lines drawn from every one of the Planets to the Sun, describe perpetually *Area's* proportionable to the Times of Description; as is own'd by all Astronomers; 'tis certain that, besides their several projectile Motions, they are every one continually attracted or impell'd towards the Sun; and from such compounded Forces revolve about him. And the Case being the same in the Moon about the Earth; the Circumjovials about Jupiter; and the Circumsaturnals about Saturn; this Corollary equally belongs to them also.

XVIII. If Bodies from a projectile Motion, and an Attraction or Impulse to a Point or Centre, move about the same in a regular *Spiral Line*, which

which intersects every Radius in the same Angle; the Force of the Attraction or Impulse, at different Distances from that Centre is *reciprocally as the Cubes* of such Distances: And *vice versâ*, if the Force of Attraction or Impulse to any Centre be *as the Cubes of the Distances reciprocally*; Bodies revolving about the same, unless they move in Circles, must describe *Spiral Lines*, intersecting *Radii* in the same Angle.

XIX. If Bodies from a projectile Motion and an Attraction or Impulse to a Point, move about it, being the *Center* of an *Ellipsis*, in the Periphery of the same *Ellipsis*; the Force of Attraction is *directly as the Distance* from such a Centre: and *vice versâ*, if the Force of Attraction or Impulse to any Point be *as the Distance* from the same *directly*, Bodies revolving about it must describe an *Elliptick Figure*; with whose Centre the fore-mention'd Point will be coincident.

XX. If Bodies from a projectile Motion, and an Attraction or Impulse to a Point, describe an *Ellipsis* about that Point, coincident with one of its *Foci*; the Force of Attraction towards that *Focus* is *reciprocally in a duplicate Proportion*, or *as the Squares of the Distances* from the same. And *vice versâ*, if the Force or Attraction to any Point be in a *duplicate Proportion*, or *as the Squares of the Distances* from the same *reciprocally*; Bodies revolving about the same must describe *Ellipses* about it, coincident with one of the *Foci* thereof.

Corollary 1. *Where Bodies revolve about any Point or Central Body, from the Figure describ'd, and the Situation of the Point or Central Body, the Law of Attraction or Impulse tending towards the same is discovered. And vice versâ, where the Law of Attraction or Impulse is known, the Figure to be describ'd by revolving Bodies, and the Situation of*

the Point or Central Body, towards which the Attraction or Impulse is, with respect to such Figures, is à priori discover'd also.

Coroll. 2. *None of the heavenly Bodies describing either Spiral Lines, or Ellipses about their Centres, 'tis certain no Law of Gravitation in a triplicate reciprocal, or direct simple Proportion of the Distance from the Central Body, obtains in the Planetary World.*

* Coroll.
Lem. 17.
prius.

Coroll. 3. * *All the Planets Revolutions arising from the Composition of their projectile Motion and Gravitation towards the Sun; and they all describing Ellipses about him, in the common Focus of all their Orbit, as is evident from Astronomy; 'tis hence certain, that the Force of their Attraction or Impulse towards the Sun, is in a duplicate Proportion of their Distances reciprocally.*

Coroll. 4. *The Case being the same as to the Moon about the Earth, and the Circumsaturnals about Saturn; this last Corollary belongs equally to them also. But Jupiter's Satellites revolving in compleat Circles, are incapable of affording Evidence in his Case.*

XXI. *If several Bodies revolve about the same central attractive Body at several Distances; and the periodical Times in which they revolve be to each other, as the Squares of their Distances from the same; the Force of Attraction or Impulse to that central Body is in a triplicate Proportion, or as the Cubes of such Distances reciprocally; and vice versa, if the Force of Attraction or Impulse be in a triplicate Proportion, or as the Cubes of their Distances reciprocally, the periodical Times of Revolution will be to each other, as the Squares of their Distances from the same central Body.*

XXII. *If several Bodies revolve about the same central attractive Body, at several Distances, in Circular or Elliptick Orbits; and the periodical Times*
of

of revolving be all *equal*; the Force of Attraction or Impulse towards the central Body is *directly*, as the Distances from the same.

XXIII. If several Bodies revolve about the same central Body, in *Circular* or *Elliptick* Orbits, at several Distances; and the Velocities be in *half the Proportion*, or in a *subduplicate Proportion of their Distances reciprocally*; or, which is all one, the *Squares of the periodical Times* of revolving be to each other as the *Cubes of the middle Distances* from the same central Body; the Force of Attraction or Impulse towards the same is in a *duplicate Proportion of the Distances* from the same *reciprocally*.

Corollary 1. *Where several Bodies, from a projectile Motion, compounded with a Gravitation towards a central Body, revolve about the same at several Distances; from the Proportion there is between the periodical Times of revolving, compar'd with the Distances from the central Body, the Law of Gravitation tending towards the same is discover'd; and, vice versâ, where the Law of Gravitation is known, the Proportion between the periodical Times compar'd with the Distances from the central Body is, à priori, discover'd also.*

Coroll. 2. *None of the heavenly Bodies periodical Times of revolving being to each other as the Squares of their Distances from the central Body, nor equal to one another; 'tis certain, as before, that no Law of Gravitation in a triplicate reciprocal, or direct simple Proportion of the Distances from the central Body, obtains in the Planetary World.*

Coroll. 3. * *All the Planets Revolutions arising from the Composition of their projectile Motion and Gravitation towards the Sun; and the Squares of their periodical Times of revolving being to each other as the Cubes of their middle Distances from him;*

* Coroll. Lem. 17. prius.

him; 'tis hence certain, as before, that the Force of their Attraction or Impulse towards the Sun, is in a duplicate Proportion of their Distances reciprocally.

Coroll. 4. *The Case being the same as to the Circumjovials about Jupiter, and the Circumsaturnals about Saturn; this last Corollary belongs equally to them also. But the Moon being a single Planet revolving about the Earth, is incapable of giving Evidence in her Case.*

Coroll. 5. *As before, the Law of Gravitation being demonstrated from the Planets revolving in Ellipses about the central Bodies in one of the Foci; the Proportion between the periodical Times, compar'd with the Distances from the central Bodies, was deducible à priori; so vice versâ, the periodical Times compar'd with the Distances demonstrating the Law of Gravitation, thence the Necessity of the Planets Revolution in Ellipses, about the central Bodies in one of the Foci is à priori demonstrated also.*

Coroll. 6. *'Tis certain, That the Annual Motion belongs to the Earth about the Sun, not to the Sun about the Earth. For since from the Moon's Orbit, and the Planets Orbits and periodical Times, 'tis certain, that the Law of Gravitation towards the Earth, and towards the Sun is the same; and by consequence, all the periodical Times of Bodies revolving about each of them in the same Proportion to one another, compar'd with their several Distances from each of them: On which Hypothesis, this Proposition suits the Phænomena of Nature, the same must be the true one, and to be fully acquiesc'd in. Now 'tis known, that on the Hypothesis of the Earth's Annual Motion, her periodical Time exactly suits, and is so between that of Venus and Mars, as the Proportion observ'd through the whole System, and demonstrable à priori, withal, exactly requires; but on the other Hypothesis 'tis enormously different. For since the Moon undoubtedly,*
and

and on this Hypothesis the Sun also, revolves about our Earth; and since the Distance of the Sun is to that of the Moon as about 81000000 to 240000 or as about 337 to 1; and the Moon's periodical Time less than 28 Days; the periodical Time of the Sun is by the Rule of Three discoverable thus: As the Cube of the Moon's Distance, 1 equal to 1, to the Cube of the Sun's 337 equal to 38272753, so must the Square of the Moon's periodical Time 28 Days equal to 784, be to the Square of the Sun's periodical Time, 30005838352; whose Square Root, 173510, are Days also, being some Days more than 475 Julian Years: So that on the Hypothesis of the Sun's Revolution about the Earth, its periodical Time must undoubtedly be 475 Years, which all Experience attests to be but a single one, So that at length the Controversy between the Ptolemaick and Pythagorean Systems of the World is determin'd; and the Earth's Annual Motion for ever unquestionably establish'd.

Coroll, 7. 'Tis certain that those Opaque Masses which sometimes appear at the Sun, are not Planets, revolving at any the least Distance from him, but Spots or Maculæ adhering to him; for whereas they revolve but once in a little above twenty five Days; on a like Calculation it will appear, that a Planet near the Surface, as these must be, cannot have three Hours allow'd for its periodical Revolution; which being so different from the foremention'd Space of twenty five Days, quite decides that Controversy, and demonstrates those Masses to be real Maculæ adhering to the Body of the Sun; as is here asserted.

XXIV. If a Planet describe an *Ellipsis* about its central Body in the *Focus* thereof, it will move fastest when it is nearest to, and slowest when 'tis farthest from the said central Body or *Focus*; and agreeably in the intermediate Places. For seeing
wherefo-

wherefoever the revolving Body is, the *Area* is still proportionable to the Time, as was before shew'd; and so in equal Times always equal; 'tis evident by how much the Distance is less, and the Line from the *Focus* is shorter, by so much must the Bodies perpendicular Motion be the swifter to compensate the same; and, *vice versâ*, by how much the former is longer, by so much must the latter be slower to allow for it.

Coroll. Hence we may obviate that Difficulty which is so commonly made about the Ascent and Descent of Planets or Comets in their Ellipses; especially when they are very eccentric; and so may understand how a Planet or Comet which descends towards the Sun, and at last arrives at his Perihelion, is able so to overcome the Sun's Attraction again, even there where it is greatest, as to throw it self farther off, and to ascend from it by the same Steps, and in the same Line by which it before descended. For since the natural Velocity corresponding to the Sun's Attraction every where, is only in a subduplicate Proportion of the Distance reciprocally; but the Velocity in any Orbit whatsoever will necessarily be in a full Proportion of that Distance reciprocally, as we have just now observ'd, 'tis plain that all the while any Planet or Comet is descending, its Velocity gains upon the Sun attracting Power; and so after the Body is past the End of the shorter Axis, (where both are in *Æquilibrium*) and in the Parabola in the whole Descent it overcomes it, and throws it self off perpetually; tho' the oblique descending Position of the Tangent does not permit it to go really farther off till it comes to its Perihelion. 'Tis alike plain that therefore all the while any Planet or Comet is ascending, its Velocity is gain'd upon by the Sun's attracting Power, and so after the Body is past the other

Lem. 23.
prius.

other End of the shorter Axis it is overcome by it, and is attracted more and more to it perpetually; tho' the oblique ascending Position of the Tangent does not permit it to approach really nearer till it comes to its Aphelion. And as to the two other Quarters of the Motion, 'tis easily stated from what has been said. For the Ascent from the Perihelion till the End of the lesser Axis, arises from the superabundant Velocity acquir'd in the Descent from the other End of the lesser Axis just before; and the Descent from the Aphelion till the said End of the lesser Axis arises from the prevailing Attraction, and Velocity too little to balance it from the other End of the lesser Axis just before. In short, while the revolving Body is in the remote Half of the Elliptick Periphery, the Attraction is too hard for the Velocity, and while 'tis in the nearer Half, the Velocity is too hard for the Attraction; and when the Attraction in part conspires with the Tangent or Direction of the projectile Motion, as in the Descent, the Velocity thence increases continually; and when it is partly opposite to the same, as in the Ascent, the Velocity thence diminishes continually; and thence such Correspondence and mutual Superabundance and Deficiency of Velocity must happen in the several Parts of the Orbit perpetually.

XXV. If the Planet B describe an *Ellipsis* about Fig. 6. the central Body in the *Focus* H; as the *Area* describ'd by the Line BH, will be exactly uniform and proportional to the Time of Description; so the *Angular Motion*, or Velocity of the Line from the other *Focus* BI, will be proportional to the Time, and uniform also; tho' not so exactly and geometrically.

XXVI. The Law of Gravitation already explain'd being suppos'd; if one Planet describe Fig. 6. an *Ellipsis* about the central Body in the *Focus* H, and

and another describe a Circle about the same in its Centre: If the Semidiameter of the Circle be equal to HE , the middle Distance in the *Ellipsis* from the same Centre or *Focus*, their periodical Times of revolving will be the same; and when the Distances are equal, their Velocity will be so too.

Corollary. *Tho' therefore the Planets revolve in Ellipses of several Species, yet their periodical Times may be as well compar'd with one another, and with their Distances from the central Bodies, as if they all revolv'd in compleat Circles; as was above done: For 'tis but taking the middle Distance in the Ellipsis for the Radius of a Circle, and the same periodical Time, and the Computation will hold as well as if the Orbit had been a perfect Circle.*

Fig. 3.

XXVII. If a Body revolve about a central Body, as about A in a Circle, as $BeEb$; and another revolve about the same in the *Focus* of its *Ellipsis*, $BHFG$, so that the Semidiameter of the Circle were equal to the nearest Distance in the *Ellipsis* AB ; the Velocity of the Body at the nearest Point of the *Ellipsis* will be greater than the Velocity of the Body in the Circle; and will be to it in half the Proportion of the *Latus rectum* of the *Ellipsis* pq , to the Diameter of the Circle eb ; or as that Line pq , to a Middle proportional between it self and eb .

XXVIII. If one Body revolve round a central Body in a Circle, and another about the same in its *Focus* describe so very Eccentric an *Ellipsis*, that it may pass for a *Parabola*; the Velocity of the Body moving along the *Ellipsis*, will be to that of the Body moving in a Circle, (the Point in the *Ellipsis* being as far from the central Body as the Circumference of the Circle) as the Square Root of two to an unit, that is very nearly as ten to seven.

XXIX.

XXIX. If a central Body have many Bodies revolving about it; 'tis perfectly indifferent in it self, and with regard to that central Body, in what Planes soever, or which way in those Planes soever, they all or any of them move; supposing that all the Planes pass through the Centre of that Body about which they revolve.

Corollary. Hence arises a convincing Argument of the Interposition of Council and Providence in the Constitution of our System; in which all the Planets revolve the same way, from West to East; and that in Planes almost coincident with one another, and with that of the Ecliptick, as Dr. Bentley hath *Serm. 8.* also observ'd. *p. 13.*

XXX. The Order of the heavenly Bodies in the Solar System is as follows: *First* of all, the vast glorious Body of the Sun is plac'd in the middle, very near the Centre of Gravity of the entire System, in the common *Focus* of every one of the Planetary Orbits. Next to him *Mercury* describes his *Ellipsis*, and that so near, that we on Earth rarely obtain a distinct View of him. Next to *Mercury* is the *Elliptick* Orbit of *Venus*, our glorious Morning and Evening Star. Next to *Venus* our *Earth*, with its Attendant the *Moon*, perform a joint Course, and measure out the Annual Period. Next to the *Earth* the fiery Star *Mars* alone, without any visible Guard accompanying him, revolves about the same Centre. Next to *Mars*, tho' at a mighty Distance from him, the largest of the Planets, *Jupiter*; with his four remarkable *Satellites*; and lastly, *Saturn* with his five little *Moons* about him, describe the farthest and most remote Orbits, and compleat the entire Planetary *Chorus*, as the Frontispiece of the Book represents them to the Contemplation of the Reader.

Scholium 1. Besides the Planets, whose Orbits are not very different from Circles, there are another Species of Bodies revolving about the Sun in such *Ellipses*, as may pass for *Parabola's*, they are so exceeding Eccentric; but as far as appears, as regularly retaining their several Periods and Orbits, as the Planets now mention'd. But because these Bodies will be more distinctly consider'd hereafter, I shall wave their farther Consideration at present, and proceed.

Scholium 2. But as to the fix'd Stars, which are not represented in the Figure, they are still so vastly more remote from the Sun, that, till very lately, they were thought subject to no *Parallax* at all, even not to that of the annual Orbit it self. The great *Hugenius* by a new, and not improbable Method of *conjecturing* their Distance, in his *Cosmotheorus*, p. 137. computes that the nearest of them can't well be at a less Distance from the Sun, or from us, than 27664 Semidiameters of the *Magnus Orbis*; each of which Semidiameters contains by the best Observations no less than 81 Millions of *English* Statute Miles, as we shall see presently: so that by this Computation, the nearest of the fix'd Stars must be about 2240784 Millions of Miles from us. And tho' since the noble Discovery of the annual *Parallax* of the fix'd Stars by Mr. *Flamsteed*, agreeing with the same before made by Dr. *Hook*, the Distance of those Stars which have been measur'd is not quite so vast and enormous, yet is it still in it self exceeding great, no less than 8000 Semidiameters of the *Magnus Orbis*, or about 648000 Millions of *English* Miles. And what is in these Observations most remarkable and surprising is this, that those three Stars, of very different apparent Magnitude, and very different Places, whose Distances have been thus accurately

ly measured, do not appear to be of very different Distances, but almost all pretty equally remote from us; contrary to the general Opinion hitherto; which has suppos'd the fix'd Stars at all manner of various Distances from us, and those which appear'd the smallest to have therefore been at the most remote, and the largest at the nearest Places. If on farther Observations this prove to be the case of the rest of the fix'd Stars, we must be forc'd to alter our Opinion, and to believe that they are all pretty nearly in a spherical Surface from us, and that our Sun, with its System is, as it were, plac'd in the Centre of the rest of the Systems, and of the visible World. For as to the learned Dr. *Gregory's* Objections against the Force of Mr. *Flamsteed's* Reasoning *Astronom.* for the annual Parallax of the fixed Stars, and *P. 275.* the annual Motion of the Earth consequent *276.* thereupon, they are too inconsiderable, and too much built on Mistakes to be at all regarded in this Matter, as I have shew'd in another place. *Philos. Mathemat.* But then as to the Nature of the fix'd Stars, 'tis *Corol. 5.* in all probability the same with the Sun's; and *Prop. XLII.* so each of them may have their respective Systems of Planets and Comets as well as he has. Which things, considering that the Number of them is continually found to be greater, according as the Telescopes we use are longer and more perfect, do vastly aggrandize the Idea of the visible Universe; and ought proportionably to raise our Admiration of the great Author of the whole to the highest degree imaginable.

XXXI. The periodical Times of each Planet's sydereal Revolution about the *Sun*, are as follow.

K *Mercury*

		days	h	'
<i>Mercury</i>	} revolves a- bout the <i>Sun</i> in the Space of	87	23	16
<i>Venus</i>		224	16	49
<i>The Earth</i>		365	6	09
<i>Mars</i>		686	23	27
<i>Jupiter</i>		4332	12	20
<i>Saturn</i>		10759	6	36

XXXII. The middle Distances of the Planets from the *Sun* are as follow.

<i>Mercury</i>	} is distant from the <i>Sun</i> about	32,000,000	} Statute Miles; each 5280 <i>English</i> and 4943 <i>Gal-</i> lick Feet.
<i>Venus</i>		59,000,000	
<i>The Earth</i>		81,000,000	
<i>Mars</i>		123,000,000	
<i>Jupiter</i>		424,000,000	
<i>Saturn</i>		777,000,000	

Scholium. The Proportions of these Numbers are unquestionable: But the Numbers themselves only within a certain Latitude under or over. The Reason of such Uncertainty is, that the *Sun's Parallax*, or Angle, which the Semidiameter of the Earth would subtend to an Eye at the Sun, on which the whole depends, is not yet accurately determin'd by Astronomers; so that no exact Number can be certainly pitch'd upon, till farther Observations put an end to our Doubts. On which Account I have put in this Caution to prevent Mistakes, and in my Computation have followed our most exact Observer Mr. *Flamsteed*, as Sir *Isaac Newton* also does in his latest Writing of this Nature, I mean his Theory of the Moon publish'd by Dr. *Gregory*, and have suppos'd the *Sun's Parallax* 10 Seconds, and from this *Hypothesis* made these and the following Calculations; which therefore cannot be very far from Truth,

Truth, and are certainly from the best Observations which have yet been made, and so the exactest Numbers that can at present be set down.

XXXIII. The Periodical Times of the *Circumjovials* Revolutions about *Jupiter* are as follows.

		da.	ho.	'	"
<i>The Innermost</i>	} revolves a- bout <i>Jupi- ter</i> in the Space of	1	18	28	36
<i>The Second</i>		3	13	13	52
<i>The Third</i>		7	3	43	00
<i>The Fourth</i>		16	16	32	00

Of the *Circumsaturnals*.

		da.	ho.	'	"
<i>The Innermost</i>	} revolves a- bout <i>Saturn</i> in the Space of	1	21	18	26 $\frac{1}{2}$
<i>The Second</i>		2	17	41	10 $\frac{1}{2}$
<i>The Third</i>		4	12	25	10
<i>The Fourth</i>		15	22	41	28
<i>The Fifth</i>		79	7	46	00

XXXIV. The Distances of the *Circumjovials* from *Jupiter* are as follow.

<i>The Innermost</i>	} is di- stant from <i>Jupiter</i>	1 $\frac{5}{8}$	Diameters of <i>Jupiter</i> .
<i>The Second</i>		4 $\frac{1}{2}$	
<i>The Third</i>		7 $\frac{1}{8}$	
<i>The Fourth</i>		12 $\frac{2}{3}$	

Of the *Circumsaturnals*.

<i>The Innermost</i>	} is di- stant from <i>Sa- turn</i>	0 $\frac{3}{4}$	Diameters of his <i>An- nulus</i> .
<i>The Second</i>		1 $\frac{1}{4}$	
<i>The Third</i>		1 $\frac{3}{4}$	
<i>The Fourth</i>		4 0	
<i>The Fifth</i>		12 0	

XXXV. The Time of the diurnal Révolutions of such of the heavenly Bodies as are already known to turn about their own *Axes* is as follows.

days ho. /

<i>The Sun</i> —	} revolves a-	25	6	00
<i>The Earth</i> —		00	23	56
<i>Mars</i> —		01	0	40
<i>Jupiter</i> —		00	9	56
<i>The Moon</i> —		27	7	43

XXXVI. The Quantity of Matter in such of the heavenly Bodies as afford us means of determining the same, is, according to the foremention'd Observations, in the Proportions following.

<i>The Sun's</i> _____	227500
<i>Jupiter's</i> _____	220
<i>Saturn's</i> _____	94
<i>The Earth's</i> _____	1
<i>The Moon's between</i> _____	$\frac{1}{32}$ and $\frac{1}{40}$

Lem. 7.
prius.

Corollary. *The Weight of Bodies at equal Distances from the Sun and Planets, being in the same Proportion with the Quantity of their Matter, as has been already said; the same Numbers assign'd in the last Lemma, which explain the latter, serve equally to explain the former also.*

XXXVII. The Diameters of the Sun and Planets.

<i>The Sun's</i> _____	763000	} Statute Miles.
<i>Saturn's</i> _____	61000	
<i>Jupiter's</i> _____	81000	
<i>Mars's</i> _____	4440	
<i>The Earth's</i> _____	7970	
<i>The Moon's</i> _____	2170	
<i>Venus's</i> _____	7900	
<i>Mercury's</i> _____	4240	

Huge-

Hugenius's Numbers are, to the Sun's Diameter, the Diameter of

Saturn's Ring as ————— 11 to 37

Saturn as ————— 5 to 37

Jupiter as ————— 2 to 11

Mars as ————— 1 to 166

Earth as ————— 1 to 111

Venus as ————— 1 to 84

Mercury as ————— 1 to 290

Cosmotheor. p. 14, 15.

XXXVIII. The Weight of Bodies on the Surface of the *Sun*, and those *Planets* mention'd in the 36th *Lemma* before, is as follows. On the Surface of

The Sun ————— 24 .40

The Earth ————— 1 .00

Jupiter ————— 2 .00

The Moon ————— 0 .34

Saturn ————— 1 .28

XXXIX. The Denfities of the fame, (what-ever be the *Sun's Parallax*) are as the Numbers following.

The Moon's ————— 123 $\frac{1}{2}$

The Earth's ————— 100

The Sun's ————— 025 $\frac{1}{2}$

Jupiter's ————— 019

Saturn's ————— 15 .0

XL. As the Weight of Bodies without the Superficies of the heavenly Bodies increafes in a duplicate Proportion of their Nearnefs to their Centres; fo within the fame Superficies, if their Denfity to the Centre be uniform, does it decrease in

Lem. 9.
prior.

a simple Proportion thereof; and is consequently greatest upon the Superficies themselves. Thus, as we have already seen, a Body at 10000 Miles Distance from the Earth's Centre, is four times so heavy as it would be at 20000. But within the Earth, if a Body were twice as near its Centre as 'tis on the Surface, it would be but half so heavy as 'tis here; if thrice as near, it would be but a third part so heavy; if four times as near, it would be but a quarter so heavy; and so for ever proportionably. Gravity therefore is most considerable on the Surface, decreasing both ways, upward in a duplicate Proportion of the *reciprocal* Distance; and downward in a simple *direct* Proportion thereof.

XLI. If the central Regions of a Globe contain a spherical Cavity within the same; Bodies plac'd therein, from the Equality of Attraction on every side, will not tend any way, or gravitate at all, but be as perfectly at Liberty, as if they were not affected by any such Power of Attraction or Gravitation.

XLII. The *Moon* revolves about the Earth from *West* to *East* in 27 Days, 7 Hours, 43 Minutes; and in the very same Space of Time, by a strange Correspondence and Harmony of the two Motions, revolves the same way about its own *Axis*; whereby, (one Motion as much converting it to, as the other turns it from the Earth) the same side is always expos'd to our Sight.

XLIII. The Librations of the *Moon's* Body, which cause that 'tis not exactly the same Hemisphere thereof which is perpetually expos'd to our Sight, arise from the Eccentricity of the *Moon's* Orbit, from the Perturbations by the *Sun's* Attraction, and from the Obliquity of the *Axis* of her diurnal Rotation to the *Moon's* own Orbit,
without

without the Knowledge of which Circumstances her *Phænomena* were inexplicable, but by the Consideration of them are easily demonstrable.

XLIV. In the 2365th Year of the *Julian* Period, or the 2349th before the Christian *Æra*, the Autumnal Equinox was on the 12th Day of *October*. 'Tis evident from the Astronomical Tables of the Anticipation of the Equinox, that in 4068 Years (the Time since the before-mention'd Year till *A. D.* 1720.) the Equinoxes have anticipated about 31 Days. 'Tis also evident, that at this time the Vernal Equinox is on the 9th of *March*, and the Autumnal on the 12th of *September*. 'Tis farther evident, that whereas now the Space from the Vernal to the Autumnal Equinox is eight or nine Days longer than from the Autumnal to the Vernal, by reason of the Position of the *Perihelion*, of the Earth's Orbit near the *Winter* Solstice; at the time before-mention'd it was not above five or six Days so. By the Anticipation therefore of the Equinoxes alone, if the Position of the *Perihelion* had been always the same, the Equinoxes at the time assigned had been on the 9th of *April*, and on the 13th of *October*; and, the equaller Division of the Year allow'd for, the Vernal Equinox was on the 10th of *April*, and the Autumnal on the 12th of *October*, as was to be prov'd.

Coroll. Since 577 Years still more backward, the Equinox must have been full four Days later, in the 1788th Year of the *Julian* Period, which is the 2926th Year before the Christian *Æra*, the Autumnal Equinox must have been on the 16th Day of *October*.

XLV. Comets are a *Species* of Planets, or Bodies revolving about the Sun, and moving in one of the Conick Sections, (which in all probability is an *Ellipsis*,) whose Motions, and, if they have *Elliptical* Orbits, whose periodical Times are as con-

stant, certain, and regular as those of the Planets, tho'till very lately generally unknown to the World.

XLVI. These *Elliptical* Orbits of Comets, if they be such, are so very oblong and eccentric, that while they come within our Observation, they are but little different from *Parabola's*, and may accordingly be consider'd as such.

XLVII. The Planes in which various Comets move, are themselves exceeding various, and at all imaginable Angles of Inclination with one another, and with that of the *Ecliptick*; they all still passing through the Centre of the Sun.

XLVIII. The Course of Comets in their Orbits is not determin'd one way, (as is that of the Planets from *West* to *East*;) but indifferently some of them move one way, and some another.

Corollary 1. *From these two last Lemmata 'tis evident that Comets move sometimes from East to West, other times from West to East; sometimes from North to South, other times from South to North; or obliquely between any of these ways, according as the Situation of the Planes of their Orbits, and the Directions of their Courses together determine them.*

Coroll. 2. *Hence 'tis certain, That the heavenly Motions are not perform'd in corporeal Vortices; seeing the Comets exactly observe the same Laws and Velocity of Motion, whether they revolve with, or against, or cross to the Planets, and the suppos'd fluid Matter of the Vortices.*

XLIX. Comets in their Descent to, and Ascent from the Sun, pass quite through the Planetary System; as may be seen in the Frontispiece.

Corollary. *Hence we may observe a new possible Cause of vast Changes in the Planetary World, by the Access and Approach of these vast, and hitherto little known Bodies to any of the Planets.*

L. If a Comet in its Descent to, or Ascent from the *Sun*, approach near to a Planet as it passes by, and its Plane be different from that in which the Planet moves; by its attractive Power it will, agreeably to the universal Law of Gravitation of Bodies, draw it from the Plane in which it before mov'd, and so cause it afterward to move in a new one, inclin'd to the former, but passing thro' the *Sun*, as the former did.

Corollary. *Hence 'tis supposable, that tho' the Planets originally revolv'd in the same common Plane, yet by the subsequent Attraction of Comets, their Planes may now be inclin'd to one another, and different; as 'tis certain de facto they now are.*

Scholium. Seeing the Law of Gravitation is universal and mutual, 'tis evident the Planet would draw the Comet from its Plane, as well as the Comet would draw the Planet; and so generally, what Effects soever the Comets could have on the Planets, the latter would have correspondent ones on the former. But as this Indication once given for all, there is no Necessity of taking notice of the Changes in the Comets; so accordingly, in what follows, I shall wholly omit the same; and confine my self to such Things as will be immediately useful in the following Theory.

LI. If a Comet revolving in the same Plane with a Planet, whose Orbit is a perfect Circle, as it passes by, approach near it, by accelerating or retarding the Velocity of the Planet, it will render its Orbit *Elliptical*. Thus if B were a Planet revolving about the *Sun* at the Center A, in the circular Orbit B e E b; and a Comet either in its Descent towards, or Ascent from the *Sun* should pass near it, it would, agreeably to the universal Law of Gravitation of Bodies, *accelerate* it, if its Attraction concurr'd with, or *retard* it, if its Attraction

Fig. 3.

traction contradicted the Planet's own annual Motion along the Periphery of its Circle. Whereupon the concentrical Orbit would become eccentric, and the Planet would afterwards revolve in an *Ellipsis*; which on an *Acceleration* would be bigger, and on a *Retardation* less than the Circle which it had till then describ'd; the former represented by B H F G, the latter by B K L I. For when the original Velocity of B was exactly adjusted to the *Sun's* Power of Attraction, and its Orbit thereupon a perfect Circle, this new Acceleration or Retardation must render it afterward incommensurate, and too great, or too little for the same; and accordingly the Orbit to be afterward, agreeably to what has been formerly explain'd, describ'd by the Planet, must be an *Ellipsis*; and bigger or lesser than the former Circle, as the Force was directed for, or against, the Planets own Motion.

Lem. 11,
12, 13.
prior.

Corollary 1. *In this Case, the Sun would no longer be in the Centre of the Figure, but in one of the Foci, viz. in the nearer Focus of the larger, and the farther of the smaller Ellipsis.*

Coroll. 2. *If B were the Earth moving circularly about the Sun from West to East, i. e. from B by e Eb to B again; and a Comet h in its Descent towards the Sun should pass by before it, or on the East-side; the annual Motion of the Earth would be accelerated, and its circular Orbit degenerate into the larger Ellipsis, B H F G, about the Sun in its nearer Focus A.*

LII. If a Comet in passing by as before, accelerate the Planet's Motion, and so enlarge the Orbit, the Planet's periodical Time of revolving will be enlarg'd, and become longer thereby. In like manner, if the Comet retard the Planet's Motion, and so diminish the Orbit, the periodical Time of revolving will be lessen'd, and become shorter. And still the more considerable the Acceleration or Retardation

tardation is, compar'd with the original Velocity of the Planet, the greater will be the Eccentricity, and the greater Difference between the former and latter Orbits, and the former and latter periodical Times of revolving also.

Corollary 1. *If in the foregoing Case the Semidiameter of the ancient Circle, with the middle Distance in the Ellipsis afterward describ'd be given, as also the periodical Time of revolving in the latter, the periodical Time of revolving in the former is at the same time determin'd. For as the Cube of the middle Distance in the Ellipsis, to the Cube of the Semidiameter of the Circle, so is the Square of the Periodical Time in the Ellipsis, to the Square of the Periodical Time in the Circle. So that three of those Terms being known, which is here suppos'd; the fourth, by the Golden Rule, is known also; whose Square Root answers the Demand of this Corollary.*

Coroll. 2. *Since therefore the three Postulata now mention'd are given in the Case of the Earth (supposing that it anciently revolv'd in a circular Orbit) as will hereafter appear; the Time of its annual Revolution in that original and circular Orbit may easily be at this Day discover'd.*

LIII. If a Planet moving in a circular Orbit, were accelerated by an Attraction directly along its Tangent or Periphery; the preceding Angle made by the Tangent and Radius CBA, would still remain a right one, and the Point B, where the Acceleration happen'd, would afterward be the nearest to the *Focus*, or the *Perihelion* in the *Ellipsis* afterward to be describ'd. So if it were alike directly retarded along its Tangent or Periphery, the Angle would still be a right one; and the Point B, where the Retardation happen'd, would be the farthest from the *Focus*, or the *Aphelion* in the *Ellipsis* to be afterward describ'd.

Fig. 3.

LIV.

LIV. If therefore such Acceleration or Retardation were caus'd by a Body moving uniformly along its Trajectory on each side of the Planets circular Periphery, the oblique Acceleration above, would take off the nearly equal oblique Retardation below, or the contrary; and thereby the Effect afterward remaining, would be all one, as if the prevailing Force, whether of Acceleration or Retardation, were only along the Tangent or Periphery; all one, as if the whole Attraction were caus'd while the attracting Body was at or near that Tangent or Periphery it self; and by consequence the Point B would be, as above, the *Perihelion* or *Aphelion* of the *Ellipsis* afterward describ'd.

Scholium. Altho' some small Inequality would arise by a Comet's moving slower above than below the Periphery of a Planet's Orbit, and so attracting longer above than below *on the one side*; and by the Comet's attracting only downward when just passing by, and at the nearest Position *on the other side*; yet because, as appears on Computation, this matter is generally not considerable; unless the Comet be vastly great, or approach vastly near, it may be wholly wav'd, and the Point B still suppos'd either just at, or very near to the *Perihelion* or *Aphelion* of the *Ellipsis* afterward describ'd.

Coroll. If therefore, in a given Year, a Comet, in its Descent towards the Sun, accelerated the Earth's Annual Motion, and chang'd its Orbit from a Circle to an *Ellipsis*; the Degree of the *Ecliptick*, and Day of the Year, when the same Attraction happen'd, may be pretty nearly determin'd by the Place of the *Perihelion* at the same Time, from the *Astronomical Tables* of its Place and Motion.

LV. If the nearest Distance of a Comet to a Planet be given, the Time of Attraction to be consider'd is from thence determinable. Thus if a
Comet

Comet in its Descent towards the Sun, as from E Fig. 5. to H, pass'd by a Planet moving in the Circumference of its circular Orbit from A to D, and so accelerated the same: Let CG be the Line describ'd by the Comet while the Planet passes along from B to C, at which last Point C the Comet is suppos'd to have been at its nearest Distance, when the Planet is at B; and let CF be equal to CG. In this Case, the Acceleration by the Comet between E and F, being nearly taken off by the Retardation between G and H; (and the like is to be suppos'd of the Acceleration beyond E, and the Retardation beyond H, not to be contain'd in the Figure) 'tis evident that all the Attraction which is to be consider'd, is that accelerating the Planet while the Comet passes from F to G, and the Planet from Q to C: As the sole View and Consideration of the Figure it self will give sufficient Evidence. Which from the Velocity of the Motion of Comets and Planets, easily calculated, might be soon determin'd; if the nearest Distance CB were once ascertain'd.

Coroll. 1. *If therefore the nearest Distance CB were known, and the Bigness or Quantity of Matter in the Comet it self; seeing the Time of Acceleration is withal known; the Quantity of Acceleration, the increas'd Velocity of the Planet; and by consequence the Magnitude of the Elliptick Orbit to be afterwards describ'd; and the periodical Time of revolving answerably thereto, might all be à priori determin'd.*

Coroll. 2. *Vice versâ, If the nearest Distance BC, with the Eccentricity of the subsequent Elliptick Orbit, or its periodical Time be given; the Bigness of the Comet may, on the same Grounds, be determin'd also.*

LVI. If a Comet descending towards the Sun pass'd near a Planet which had a secondary one revolving about it; unless their Situation were so
accu-

accurately and nicely adjustly, that it approach'd equally near to them both, these two Planets would no longer revolve together, but being for ever separated, must describe different Orbits about the Sun. This is easily demonstrable; since any Diversity of Attraction must change each of their annual Orbits, and periodical Times, in proportionably different Degrees. The least of which were more than sufficient to such a Purpose as we here are speaking of.

Coroll. *If therefore the Planetary Orbits were all or any of them originally Circles; and by Attraction of Comets passing by, were chang'd into Ellipfes; The Position of their several Satellites, which they still retain, must have been most wisely and wonderfully adjusted, by the Divine Providence, with their Fellows; with their primary Planets; and with the Orbits and Periods of the Comets; without which Correspondence, the present System of the World must have been vastly alter'd; and the primary Planets have lost their Attendants for ever.*

Fig. 2. LVII. Seeing therefore the Earth still retains its secondary Planet the Moon, which at its original Formation belong'd to it; if its present *Elliptick* Orbit be the Effect of the passing by of a Comet, the Time of such passing must have been about three Days after the New or Full Moon. Let *og* represent a Section of the Ecliptick Periphery; in which the Earth *a* is performing its annual Course, from *West* to *East*, or from *o* towards *g*; Let *c* be the Moon, performing in like manner, (besides her menstrual Revolution the same way, from *t* by *c* towards *s*, about the Earth) her annual Course, with the same Velocity as the Earth, from *u* towards *w*, along her Periphery *uw*, equidistant from the Ecliptick *og*: Let *nm* represent the Trajectory of the Comet intersecting the
Line

Line passing thro' the Sun Ii , in the Angle mbi of 12, 14, or 16 Degrees more or less: Let b be the Comet descending from n towards m in its Approach towards its *Perihelion*: From the Earth's Centre, from d and x , (the Line ax being drawn parallel to the Comet's Trajectory nm ,) let fall Perpendiculars to the Trajectory af , de , xy . Now if while the Comet were passing from f to y , the Moon stood still, and did not proceed in her annual Course along her Periphery uw , she must have been at that Point x , that is, not above one Day past the New at t ; and so the nearest Distances af , xy being equal, the Attractions of the Earth by the Comet at f , and of the Moon by the Comet at y , would have been equal also; and by consequence, this Position would have secur'd the future Agreement and Company of these two Planets, and the Time of the passing by of the Comet fix'd to a *single Day after the New Moon*. But by reason of the Moon's progressive annual Motion along her Periphery uw , while the Comet descends from f towards y ; she must have been in that Point of her menstrual Orbit c , where cd is to cq or da , as her Velocity to the Comet's, or as 7 to 10; that so the Comet descending from its nearest Distance to the Earth at f , to its nearest Distance to the Moon at e ; and the Moon arriving, at the same time, by her annual Motion, at the Point d , the nearest Distances af , de may still be equal; and the Acceleration of the Earth and the Moon may still be the same. Now this being the Case; the Place of the Moon c must be about 43 Degrees more or less past the Point t , in its menstrual Orbit, or the Conjunction with the Sun; that is, about three Days past the New Moon. And the like will be demonstrated of three Days past the Full Moon, by the same Figure and Reasoning;

if

if we do but shift the Scene, and let c represent the Earth, and uw the Ecliptick Periphery; a the Moon, and og its Periphery. For all the rest remaining as above; the Angle δca which the Moon a must have pass'd after the Full at ζ , being equal to the alternate cat , would require equal Time to be describ'd; and so the Time proper for the Situation of the Earth and Moon, (which is equally necessary in this as in the former Case) as the Figure represents it, will be about three Days after the Full; as this Corollary asserts.

Coroll. *If therefore in a given Year a Comet, in its Descent towards the Sun, accelerated the Earth's and Moon's annual Motions, and thereby chang'd their Orbit from a Circle to an Ellipsis; when the Day of the Year, from the Place of the Perihelion, were pretty nearly determin'd; by this last Lemma, the very Day is determin'd also from the Astronomical Tables of the Conjunction of the Sun and Moon.*

LVIII. If our Earth once revolv'd about the Sun in a circular Orbit, whose Semidiameter were equal to the Earth's original Distance from the Sun at its *Perihelion*, the annual Period was very nearly equal to 12 *Synodical* or 13 *Periodical* Months. 'Tis evident, that 12 *Synodical* or 13 *Periodical* Months, (equal to each other in the present Case,) are 355 Days, 4 Hours, 20 $\frac{1}{2}$ Minutes. 'Tis also evident, that the Eccentricity of the Earth's Orbit, or the Distance between the *Focus* and Centre of its *Ellipsis*, was, according to the ancient Astronomers, *Hipparchus* and *Ptolemy*, $\frac{2}{1000}$ of the entire middle Distance. By the Moderns 'tis found somewhat less, (and those who know Sir *Isaac Newton's* Philosophy, will easily allow of some Diversity in different Ages;) by *Tycho* 'twas determin'd to be near $\frac{1}{1000}$; by *Cassini* since $\frac{1}{700}$; and last of all by our most accurate Observer

server Mr. *Flamsteed*, (as he was pleas'd by Letter with great Freedom to assure me) $\frac{1.692}{1.700}$, or near $\frac{1.7}{1.700}$, as *Cassini* had before determin'd. All which consider'd, we may very justly take a kind of middle between the ancient and the modern Eccentricity for the true original one; that is, about $\frac{185}{10000}$ or more nicely $\frac{184\frac{1}{2}}{10000}$ that is, $\frac{18475}{1000000}$ for the Difference between the ancient Semidiameter of the circular Orbit, and the middle Distance in the present *Elliptick* one; then by the Golden Rule, as the Cube of 1000000, (the middle Distance in the *Ellipsis*) to the Cube of 981525, (the Semidiameter of the ancient Circle;) so is the Square of 525969, (the Number of Minutes in our present sidereal Solar Year,) to the Square of the Number of Minutes in the ancient sidereal Solar Year, whose Root being $511460\frac{1}{2}$ Minutes, or 355 Days, 4 Hours, $20\frac{1}{2}$ Minutes, appears to be exactly and surprizingly equal to the Lunar Year before-mention'd.

Coroll. Upon this Hypothesis the ancient Solar and Lunar Year were exactly commensurate and equal; and 10 Days, 1 Hour, $28\frac{1}{2}$ Minutes, shorter than the present Solar Year. Which last Number, tho' it be not equal to the Lunar Epact at present, is yet rightly assign'd; each Synodical Month being (by the quicker angular Revolution of the Earth then) so much longer, as upon the whole adjusted, the Periods as is above stated: Which on Calculation will easily appear.

LIX. If a Planet which has a diurnal Revolution on its own Axis, have a new Addition of Matter laid upon its Surface, which no way partakes of that Motion before, its diurnal Motion will be retarded in a sesquialteral Proportion of the Quantity that additional Matter bears to the

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entire Quantity of Matter in the Planet. For if this additional Quantity of Matter were equally spread over the inward Parts of the Planet, it would then only increase it uniformly in Density, and so retard its Motion in the exact Proportion of its Quantity of Matter, compar'd with the former Quantity in the Planet. And this would also be the Case, if instead of an equal Dispersion of the Matter, that of each Circle parallel to the Planet's Equator, of which the Planet may be conceiv'd to be compos'd, were plac'd at that Distance from its *Axis* which the Centre of Oscillation or Percussion of each revolving Radius obtains in it; that is, at two thirds of each Radius's Distance from its *Axis*, or Centre of Motion. But because the additional Matter is suppos'd to be plac'd on the Surface of the Sphere, and so at the Circumference of every Circle, its Velocity is sesquialteral to that it would have had at the Centre of Oscillation or Percussion, and so its retarding Power will be increas'd in the same sesquialteral Proportion. *Q. E. D.*

Coroll. *If therefore the Quantity of additional Matter be known, the Quantity of Retardation is known also, and vice versa.*

LX. As Comets agree with Planets in a regular Motion about the Sun, the common Centre or *Focus* of our System, so do they as to their Bulk and Magnitude; being, generally speaking, about the Bigness of Planets, as the Observations of Astronomers demonstrate.

LXI. Besides the Bodies of the Comets themselves, which are solid, compact, and durable; there is round about the generality of them a vastly large, thin, pellucid Fluid; containing withal great Quantities of opaque or earthy Particles, most of them in probability towards the central Solid, while the lightest and rarest, as
Vapours,

Vapours, are most of them towards the Circumference or Parts remotest from the central Solid, yet constituting together a very confused, irregular, unequally dispos'd, and uncertainly agitated Mass of Bodies; whose Diameter is generally 10, if not 15 times as long as that of the Body it self; and this Mass is called the *Atmosphere* thereof.

LXII. By reason of the mutual Access and Recess of the Comets, to and from the Sun, their Atmospheres are incapable of attaining, or at least of long retaining any regular and orderly Situation and Disposition of Parts, according to the Law of specifick Gravity. In short, while they are mov'd in so exceeding eccentrical Orbits, they cannot acquire, or at least not long preserve, such a permanent Constitution as the Planets have, and as the Conservation of Plants and Animals do necessarily require, and are therefore to be look'd upon, in their present State, as uninhabitable, unless for a State of Punishment for their Inhabitants.

LXIII. But in case the Orbit of a Comet were chang'd into that of a Planet, *i. e.* if its eccentrical *Ellipsis* were turn'd into a concentric Circle; or an *Ellipsis* not much differing therefrom; at a suitable and convenient Distance from the Sun; there is no reason to doubt but the Parts of that confused Atmosphere which now encompass it to such a prodigious Distance, might subside and settle downwards according to their several specifick Gravities; and both obtain and preserve as settled, fix'd, and orderly a Constitution as a Planet has: which Constitution, if the Atmosphere of a Comet were as well predispos'd for the same as the original *Chaos* of a Planet, would produce a Planet as fit for the Growth of Vegetables and the Habitation of Animals as that on which we live, or any other in the Solar System.

LXIV. Besides the central Solid, or Body of the Comet, and its vast Atmosphere encompassing it, there is also generally a long lucid Train, which in the Approach to the Sun is by it acquir'd; and appears to be nothing else but the lightest and rarest Parts of its Atmosphere rarified by the Sun's Heat; which becoming thereby, if not specifically lighter than the *Æther*, or Atmosphere encompassing the Sun, yet at least so rare and light, as to yield to the Sun's Rays, and to be carry'd away by them, and so to rise in a Mist or Steam of Vapours towards the Parts opposite to the Sun; and this is call'd the *Tail* of it.

LXV. This immense Cylindrical Column of rarify'd Vapour, tho' its Craffitute or Diameter be usually more than 100000 Miles, is so very much expanded, and in so exceeding rare a Condition, that the fix'd Stars may be discern'd quite through the same, as they may also through the thinnest and remotest Regions of the Atmosphere.

LXVI. This so rare, fine, expanded Vapour moves regularly with, and accompanies the Comet it self in its entire Course, any way whatsoever; even through the System of the Planets, and that without any Disturbance.

Coroll. *The vast Spaces between, and beyond the Planets, are not full of subtle or Ethereal Matter; but are either perfectly, or at least sensibly a real Vacuum or void.*

LXVII. The *Phænomena* of Comets Motions suppose and depend on the annual Motion of the Earth, without which they are insoluble. Thus they sometimes seem to move with greater, sometimes with lesser Velocity, than the Rules of their own, or indeed any other regular Motion require or permit: nay, sometimes they appear to us Stationary and Retrograde: all which, as in the Planets,

Planets, will naturally arise from the Motion of the Earth, and of the Spectator's Eye therewith, and is thence exactly deducible; but without that *Hypothesis*, cannot be accounted for. Thus also towards the End of their Appearances, they seem to deflect from that great Circle in which they before were seen to move; the Motion of the Earth then being more considerable, compar'd with that of the Comets; and so causing a more sensible *Parallax*, or Diversity of Appearance than before, while their own Motion was so much swifter: and the same is observable in the other *Phænomena*.

Corollary. *Hence arises a convincing Argument for the annual Motion of the Earth: which, as 'twas known to be necessary to account for the Phænomena of Planets before; so now appears no less so in relation to those of the Comets. All the heavenly Motions at last attesting the Truth, and establishing the Certainty of the same.*

LXVIII. Tho' some Comets never come very near the Sun, even in their *Perihelia*, nay not quite so near as the Earth it self; yet others of them approach in their *Perihelia* so very near to the Sun, that they must be prodigiously heated and scorch'd thereby; and this to such a degree, that they may not be entirely cool'd in very many thousands of Years. Thus the last famous Comet 1680, 1681, at its *Perihelion* on the 8th of December 1680, sustain'd a degree of Heat 28000 times as great as that we feel with us in Summer; or about 2000 times as intense as is that of a red hot Iron. So that, by Sir *Isaac Newton's* Calculation, if that Comet were as big as our Earth; as dense and solid as Iron; and were throughout equally heated to the fore-mention'd degree, 'twould scarce in our Air be fully cool'd in 50000 Years. And by consequence in the vastly rarer Atmosphere of the Sun, in which

*Philos. Nat.
Princip.
Math. p.*

the heavenly Bodies revolve, not under a vastly longer time.

Corollary 1. *Comets do not wholly consist of Vapours, Exhalations, or such other dissipable Matter, as was formerly suppos'd: otherwise they must have been utterly incapable of sustaining any Part of so violent a Heat, (which yet we see they sometimes do) without an entire Dissipation and Dissolution.*

Coroll. 2. *Whereas the Atmosphere of a Comet is chiefly a Fluid, and yet but a small Part thereof by the utmost Heat capable of Rarefaction (which appears from the but small Diminution of the Atmosphere when the Tail is largest, and the Heat most intense) 'tis evident that its Fluid is a very different one from those we are here acquainted withal. For since the main Bulk thereof retains its Constitution and Situation quite through the Action of the most violent Heat imaginable; which would dissipate and rarefy all the Watery, and perhaps Earthy Parts visible with us; it must, by its mighty Density, Gravity, Compactness, or some other Property not belonging to Fluids here on Earth, be incapable of greater Expansion than it has of it self; and be a compact, dense, or heavy Fluid, or Mass of Fluids, of which we have no obvious Example; and for which we have no proper Epithet or Name among us.*

Coroll. 3. *Tho' Vapour, or the small Parts of Water, be the soonest subject to Rarefaction; and the Tail of a Comet, before its Approach to the Sun, be therefore perhaps nothing but a Mist or Steam of such Vapours; yet may the same Tail after the Perihelion be in part composed of more gross, heavy and opaque Corpuscles. For when the Intensity of the Heat in the Perihelion is sufficient to dissolve and rarefy not Vapour alone, but Sulphur, Nitre, Coal, or other gross and earthy Steams and Exhalations; whatsoever of such a Nature the Atmosphere of the Comet contains, will sure*
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be in some sort affected, and elevated with the Vapour in the Tail, upon such an Approach of the Comet to the Sun as we are speaking of. Tho' therefore the Tail should be suppos'd in its Descent towards the Sun to be pure unmixed Vapour, or watery Particles, (as withal the utmost Regions of the Atmosphere it self in probability are;) yet the same Tail after the Perihelion, ought to be esteem'd a more heterogeneous and impure Mixture; especially in the lowest Spaces of it, and those Parts which are nearest to that Atmosphere it self, from whence the whole does proceed.

LXIX. The diurnal Motion of Planets is in it self perfectly distinct from, and wholly independent on the annual. This I hope will be universally granted without any Necessity of a Demonstration.

LXX. If a *Chaos*, i. e. a confused fluid Mass or Congeries of heterogeneous Bodies, (suppose it were a Comet's Atmosphere, or any other such like irregular *Compositum* of mingled Corpuscles) in its Formation were subject only to an annual Motion about the Sun, without any diurnal Rotation about an *Axis* of its own; the Figure thereof would be that of a perfect *Sphere*; as from the uniform Force of Gravity, and consequent Equilibration of Parts on all sides, is easily demonstrable. But if during its Formation it had a diurnal Rotation about an *Axis* of its own, the Figure thereof (by reason of the great Velocity and consequent *conatus recedendi à centro motus*, diminishing the Force of Gravity at the equatorial Parts) would be that of an *oblate Sphæroid*, such as an *Ellipsis* revolving about its lesser *Axis* would generate.

LXXI. If a Planet consisted in great measure of an Abyss or dense internal Fluid, and a Crust or Shell of Earth plac'd on its Surface; tho' the diurnal Rotation were not begun at the Formation

thereof from a *Chaos*, and so its original Figure were *Spherical*; yet upon the commencing of the said diurnal Rotation, it would degenerate immediately into that of an *oblate Sphæroid*, and retain it afterward, as well as if it had put on the same at its primary Formation.

Corollary. *Since therefore the greater Quickness of the Vibrations of the same Pendulum, and the greater Gravitation of Bodies near the Poles than the Equator, consequent thereupon, demonstrate the former Regions of the Earth to be nearer its Centre than the latter; and that consequently the Figure is that of an Oblate Sphæroid; 'tis evident, that either the diurnal Motion commenc'd before the Original of its present Constitution; or that its internal Parts are in some degree Fluid, and so were pliable and alterable on the after-commencing of such diurnal Rotation. And this Corollary extends equally, if not more to Jupiter; whose diurnal Rotation is quicker than our Earth's, and by consequence its Figure farther from Spherical. Thus by Sir Isaac Newton's Calculation the Diameter of the Equator of the Earth is to the Axis thereof only as 231 to 229. But in Jupiter, according to the same Sir Isaac Newton's Calculation in his last Edition, as about 9 to 8. Which is very considerable and sensible; and accordingly attested to by the concurrent Observations of Cassini and Mr. Flamsteed.*

LXXII. If such an upper Crust or Shell of Earth on the Face of the Abyfs, were fix'd and consolidated before the diurnal Rotation thereof commenc'd, it would remain entire, continued, and united all the time of its spherical Figure, or all the time it had no other than an annual Revolution. But by the Beginning of the diurnal Rotation; which would make the Surface of the Abyfs and its sustained Orb of Earth put on the
Figure

Figure of the *Oblate Sphæroid* before-mention'd; that Upper Orb must be stretch'd, chap'd, and crack'd; and its Parts divided by perpendicular Fissures. For the Periphery of an *Ellipsis* being larger than that of a Circle where the *Area* is equal; and the Superficies of a *Sphæroid* generated by its Circumvolution, consequently, larger than that of a Sphere generated by the like Circumvolution of a Circle, which is the present Case; that Orb of Earth, 'tis plain, which exactly fitted, and every way enclos'd the Abyſs while it was a Sphere, would be too little and strait for it, when it after became a *Sphæroid*; and must therefore suffer such Breaches and Fissures as are here express'd. And if it be objected, that since the first *Impetus* of the dense Fluid tending to the stretching and breaking of the Orb above, is infinitely less than any succeeding *Impetus* acquir'd by Motion; and since there is at first no room for actual Motion, there cannot be *Impetus* sufficient to break the Crust; I answer, that this Objection might deserve to be consider'd, if the Mechanical Cause which we shall hereafter assign of the diurnal Rotation, *viz.* the oblique Collision of a Comet, was not sufficient to take away the Foundation of it. It being probable that this prodigious Impulse alone would break the upper Crust in some measure it self, and so make way for that succeeding *Impetus* of the diurnal Motion which would then have its Effect, and cause still more of those Breaches and Fissures in the upper Crust, which are taken notice of in this Proposition.

LXXIII. The State of Nature in a Planet, constituted as above, while it had only an annual Revolution, would be as follows.

(1.) By reason of the same Face of the Planet's respecting continually the same *Plaga* of the Heavens,

vens, or the same fix'd Stars; and its continual Parallelism to it self; all the apparent Revolution of the Sun must depend on the annual Motion; and *A Day and a Year be all one*. This is evident, because, as *a Year* is truly that Space in which the Sun seemingly, and the Earth really performs a single Revolution round the *Ecliptick*; so *a Day* is truly that Space in which the Sun passes, or appears to pass from any certain Semi-Meridian to the same again once: which Spaces of Time are here the very same, and so the Apellations themselves *Year* and *Day*, may indifferently and promiscuously be apply'd thereto.

(2.) The Course of the Sun and Planets, (for the fix'd Stars were then *Fix'd* indeed; having neither a real nor seeming Motion) must be contrary to what it has appear'd since: their Rising being then in the *West*, and their Setting in the *East*; which, from the way of their present diurnal Rotation, has since, as all know, been quite different.

(3.) There must be a perpetual Equinox, or Equality of Day and Night, through the whole Planet; by reason of the Sun's describing each Revolution a great Circle about the same, on which alone such an Equality depends.

(4.) The *Ecliptick* must supply the Place of an Equator also; and the torrid, temperate, and frigid Zones be almost alike dispos'd with regard to that Circle, as with us they are with regard to the real Equator.

(5.) To such as liv'd under or near the said *Ecliptick*, the Poles of the World or *Ecliptick*, the only ones then in Being, would be at or near the Horizon; and so not considerably elevated or depress'd to the Inhabitants there. But upon the commencing of a quicker diurnal Rotation, the
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same way with the annual, the Case would be in all these Particulars quite different. For,

(1.) By reason of the Quickness of the new diurnal, in comparifon of the ancient and continued annual Revolution, *Days* and *Years* would be entirely diftinct Spaces of Time: the Sun returning to the fame Meridian very often, while (from one Tropick to another, and fo to the fame again) he appear'd to have compleated his longer annual Period.

(2.) By the diurnal Rotation of the Planet from *West* to *East*, the moft fenfible Revolution of the Sun, of the other Planets, and of all the heavenly Bodies, would be from *East* to *West*; and they would all Rife at the former, and Set at the latter Part of the Horizon.

(3.) The perpetual Equinox would be confin'd to the Equatorial Parts of the Planet; and all other Countries would have longer Days in Summer, and fhorter in Winter, as now obtains in the World; when only *March* 10, and *September* 12, have Day and Night equal to each other through the whole Earth.

(4.) The Ecliptick and Equator would be entirely different; the latter a real Circle, or Line, on the Planet, equally diftant from its own proper Poles; the former confin'd to the Heavens, and not, with refpect to the Planet, eafily to be taken notice of. The torrid, temperate, and frigid Zones would regard the new Equator, and be from it diftinguifh'd and dispos'd almoft in the fame manner as before they were from the Ecliptick, and that with greater Niceneſs, and more exact Boundaries.

(5.) The Poles of the World, which before were to the Inhabitants near the ancient Ecliptick, neither confiderably elevated nor deprefs'd, but
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situate near the Horizon, would seem entirely chang'd, and particularly at the Interfection of such ancient Ecliptick, and the succeeding *Northern* Tropick, the *Northern* Pole would appear to be elevated above, the *Southern* depress'd below the Horizon; and the Sun and Planets, whose Motions were before either exactly or nearly over the *Vertex*, and so at or almost at right Angles, the Horizon would appear inclin'd or bent towards the *Southern* Parts; and that way become oblique, and at plainly unequal Angles with the Horizon for ever after.

Corollary 1. *To the Inhabitants of that Place last mention'd, the Beginning of the Night, and of the Autumn, or Sun-set, and the Autumnal Equinox, would in such a primitive State of a Planet, be either exactly or nearly coincident: And vice versâ, the Place to which they were so coincident, was that Interfection just now assign'd, or at least under the same Meridian therewith.*

Vid.

Arg. 7.

Hypoth. 1.

infra.

Coroll. 2. *Such a Planet would be more equally habitable in the second, than in the first State. For, from the spherical Figure of the Planet at first, the Central hot Body, (of which hereafter) would equally reach all the Regions; and the Sun chiefly affect the Torrid Zone; and still less the Temperate, but least of all the Frigid ones; as he does at present. So that if any one of these Climates, by reason of the due Proportion of Heat afforded it from the Sun, were habitable, neither of the other could with any sort of Equality be so too. But when the Figure of the Planet became an oblate Sphæroid, (as on the commencing of the diurnal Rotation we have shew'd it would;) the Proportion of Heat would be upon the whole more equable through the several Climates of the Planet; the greater Vicinity of the Central Hot Body to the Frigid Zones, in some mea-*
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sure compensating the greater Directness of the Sun's Position to the Torrid one; and rendring the compleat Surface of the Planet somewhat more universally habitable on account thereof.

Coroll. 3. *Where the States of external Nature are so very different (as on the same Planet before and after its diurnal Rotation begin, they appear to be;) 'tis reasonable to suppose, that the Natures, Constitutions, and Circumstances of Creatures, which were the Inhabitants in such different States, must be suitably and proportionably different from one another.*

Coroll. 4. *'Tis therefore, without due Allowance for every thing, very unsafe arguing from one State or its Circumstances to another; and very unjust to conclude Things unaccountable or absurd in one, only because they are strange and unknown to the other State. The like is to be said of Phrases, Descriptions, or Relations concerning one, which may easily be misunderstood in the other, without an exact Consideration and Allowance for the Diversity of Things belonging thereto.*

LXXIV. If the Atmosphere of a Comet, or any other such a fluid, confused *Chaos*, were by a regular and orderly Digestion and Subsidence brought into a consistent and durable State; the universal Law of specifick Gravity must prevail, and each Mass take its Place, generally speaking, according to it, (whether 'twere fluid or solid) from the Centre to the Circumference of the whole.

LXXV. Fluids are at least as capable of all Degrees of Density and specifick Gravity, as Solids. Thus the Proportion of the heaviest and lightest Fluids, Quicksilver, and Oil, are nearly as fifteen and one; when yet the Proportion of the heaviest Solid, Gold, and the lightest Earth or Mold which we find here, is not quite as ten to one. On which account, 'tis highly reasonable to allow, that possibly

sibly there may be as much Variety and Diversity in the Fluids belonging to a Planet, as we see there is in the Solids thereof.

Corollary. *From these two last Lemmata, it appears as reasonable to suppose a great Part of the internal Constitution of a Planet to be a Fluid, or System of Fluids, as to be a Solid or System of firm and earthy Strata, which yet is usually suppos'd; and which of these Hypotheses best suits the Constitution of the Original Chaos, and the Phænomena of Nature afterward, is in reason to be embrac'd.*

LXXVI. In the regular Formation of a Planet from a *Chaos*, it must be much more rare and unusual to lodge very heavy Fluids near the superficial Regions, among Bodies of a lighter and rarer Texture, than Solids equally so. For the Corpuscles of very dense and heavy Solids, when they are once entangled among, and mix'd with others tho' of very different Density and specifick Gravity, must afterward (let the Place proper for Bodies of their Weight be never so much nearer the Centre) lye according to their first casual Situation. Thus if you take Dust of Gold, Silver, or Brasse, with Sand, Gravel, or Saw-dust, and mix them, or let them subside indifferently together, as they place themselves at first, so, notwithstanding their different Weight, will they be situate ever after. But in Fluids the Case is quite otherwise, for they will obtain their due Place, not only when mix'd with Fluids, but with any solid Corpuscles whatsoever. Nay, besides that, they will penetrate the Interstices of Bodies heavier than themselves; and unless where those Bodies are firmly consolidated or conjoin'd together, will settle into, and fill up the same, without any regard to the Situation according to specifick Gravity. Fluids are compos'd of moveable, separable Parts, diffusing, subsiding, and

and flowing every where, and thereby will be so far from resting at Regions too high and remote from the Centre, considering their specifick Gravity, that how light soever they are, unless the earthy Parts under them be either fix'd and consolidated, or their Interstices already entirely fill'd and satur'd, they will insinuate themselves, and by degrees approach as near as possible to the Centre of that Planet to which they belong.

Corollary 1. *Tho' our Earth should contain vast Quantities of dense and heavy Fluids within, as well as like dense and heavy Solids; yet 'tis more strange that we have near the Surface one Specimen of the former, (viz. Quicksilver) than that we have so many Sorts, and so much larger Quantities of the latter (the Mineral and Metallick Bodies) much denser and heavier than that common Earth among which they are found.*

Coroll. 2. *No Argument can be drawn from the Variety of dense and heavy Solids, and the single Instance of dense and heavy Fluids, to prove the Improbability of a subterraneous, dense, and heavy Fluid, or System of Fluids, on whose Surface our Orb of Earth may be suppos'd to rely; if the other Phænomena of Nature require such an Hypothesis.*

LXXVII. If a *Chaos* were chiefly compos'd of a dense Fluid, of greater specifick Gravity than its solid, dry, or earthy Parts, the Place of such a dense Fluid upon regular Formation, would be nearest the Centre, and the solid or earthy Mass would encompass it round, enclose it within it self, and rest upon its Surface; and *vice versâ*, if an Orb of Earth be situate on the Surface of a Fluid, that Fluid is denser and heavier than the entire Columns of such an Orb of Earth consider'd together.

LXXVII. If a Solid be either contain'd in, or fall upon a Fluid of greater specifick Gravity than
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it self, it will neither sink to the Bottom, subside entirely within, nor emerge quite out of the same; but Part of it remaining immers'd, the other Part will be extant above the Surface of the Fluid; and that in a different Degree, proportionably to the different specifick Gravity of the Solid, compar'd with that of the Fluid.

LXXIX. Such a Solid will continue to that certain Depth immers'd in the Fluid before-mention'd, that if the Space taken up thereby were fill'd with the Fluid, that Portion of the Fluid were exactly equal in Weight to the whole Solid. Thus, if a Cube of Wood or Brass were immers'd in a Fluid of twice its specifick Gravity, it would one half subside within, and the other half be extant above the Surface of the Fluid. If it were immers'd in a Fluid of thrice its specifick Gravity, two thirds of it would be extant, and but a third Part inclos'd within the said Surface, and suitably hereto in all other Proportions whatsoever. These two Propositions are demonstrated by *Archimedes*, and are the known Foundations of *Hydrostatics*.

LXXX. If therefore solid Bodies, equal in visible Bulk, or taking up equal Spaces, but of unequal Density and specifick Gravity, rest upon the Surface of a Fluid denser and heavier than themselves, they must remain immers'd in the same in different Degrees; the heaviest sinking deepest, and the lightest being the most extant above the Fluid. Thus, if six several Cubes of equal apparent Magnitude, made of Gold, Lead, Silver, Brass, Iron, and Stone, were laid upon the same Fluid denser and heavier than any of them, every one severally would sink so much deeper as it was heavier, and thereby the upper Surface arising from them all, become very unequal.

LXXXI.

LXXXI. If upon the first general Digestion and Separation of Parts in a *Chaos*, the upper Regions are for the most part compos'd of liquid or fluid Bodies, with only a few dry, solid, or earthy Parts intermix'd; the outward Surface, after the Formation is entirely over, will be smooth and even, as the Surface of Liquors constantly of it self is. But if, on the contrary, the Quantity of dry, solid, or earthy Parts be vastly greater than of the liquid or fluid ones, the Surface will be rugged and uneven, by the different Degree of the Immersion of the different Columns thereof, in that dense Fluid or Abyss upon which the Orb is plac'd.

Corollary 1. *In the former Case all the Corpuscles will obtain their proper Place, (the Fluidity freely permitting their Passage) according to their respective specifick Gravity. But in the latter they must take their Places rather according as they chanc'd to be before situate, than according as their specifick Gravity would of it self determine them. The Case of that Part of the Lemma, and of this Corollary, being almost the same with that before-mention'd; where the Dust of Gold, Silver, or Brasse, with Sand, Gravel, or Saw-dust, are suppos'd to be let fall uncertainly upon a Fluid heavier than the whole mixed Mass taken together; For those Columns where the Gold, and other Metallick Dust were predominant, sinking farthest into the Fluid, and those where Sand, or the other lighter Particles were so, not so far; the upper Surface must be uneven; and withal the several Species of Corpuscles must retain that Place where they chanc'd to be at first dispos'd, without any Possibility of recovering any other which by the Law of specifick Gravity were due to them.*

Coroll. 2. *If therefore the upper Regions of a Chaos, whose Quantity of Liquid is very small in comparison of its solid Corpuscles, do subside into a Fluid*

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of greater specifick Gravity than its own Columns taken together are, an Orb of Earth will be compos'd on the Surface of the Fluid; and its different Columns being made up of Bodies of very different Natures and specifick Gravities, (as must happen in such a confused heterogeneous Mass, as we call a Chaos, particularly the Atmosphere of a Comet;) that Orb will sink into the Fluid in different Degrees; and thereby render its Surface unequal, or distinguished into Mountains, Plains, and Vallies. So that by how much any Column was compos'd of rarer, more porous, and lighter Bodies, by so much would it produce a higher Mountain; and in like manner, by how much a Column was compos'd of more close, fix'd, dense and solid Bodies, by so much would it produce a lower Valley; and so vice versâ, the higher any Mountain, the more rare, porous, and light its Column; and the lower any Valley, the more fix'd, close, dense, and solid its Column must needs be suppos'd.

Coroll. 3. If therefore any Planet be immediately in its first Formation of an unequal Surface, compos'd of Mountains, Plains, and Valleys; and the Order of its internal Strata be disagreeable to the Law of specifick Gravity; it has exactly proper Indications to prove, that the Quantity of Fluids in the upper Regions was originally small in comparison of its earthy Parts, and that such an uneven Orb is situate on a Fluid denser and heavier than it self. [Which Case how exactly it corresponds to the known Circumstances of our Earth, is left to the Consideration of the Reader.]

LXXXII. If any of the heavenly Bodies be plac'd near a Planet, by the Inequality of its Attraction of the Parts at unequal Distances from it, a double Tide, or Elevation of the Fluids thereto belonging, whether they be inclos'd within an Orb of Earth, or whether they be on its Surface above,

above, must certainly arise; and the diurnal Rotation of such a Planet being suppos'd, must cause such a successive Flux and Reflux of the said Fluids, as our Ocean is now agitated by. Thus, if $adb c$ be the Earth, and $b i D b$ be a Comet, or any of the heavenly Bodies plac'd near the same, and the upper Orb of the Earth be situate above a vastly large fluid Abyss, the Comet or heavenly Body will considerably more attract the nearer Parts about b , than it does those about the Line $d c$, or the middle Parts of the Earth; by which Attraction where-ever the Particles attracted are not solid, fixed, and unmoveable, they will be elevated or raised into a Protuberance $d b c$. In like manner, the Comet or heavenly Body will considerably more attract the middle Parts near the Line $d c$, than those more remote about a , and thereby occasion their slower Motion towards it self, than that of the foresaid middle Parts; and consequently permit them to remain farther off the Centre; or, which is all one, to elevate themselves into the opposite Protuberance $d a c$. And this Effect not depending on the Situation of the Fluid under the Orb of Earth, is equally evident with respect to the Atmosphere and Ocean upon, as any Abyss beneath the same, and so must cause a double Tide or Elevation of the Fluids of the Globe. And this double Tide, by the diurnal Rotation of the Earth from *West* to *East*, will shift continually from *East* to *West*, and cause the Elevation and Depression of the Ocean twice each Revolution, which we so wonder at, and take so much notice of amongst us.

Corollary 1. *Since therefore the Vicinity of the Moon, and the Vastness of the Sun's Body, make their Force considerable with regard to the Fluids of*

our Earth, their several Attractions must produce two several double Protuberances, Tides, or Elevations of the Ocean and Atmosphere thereof; whence must arise very remarkable Phænomena relating thereto; of which in the following Corollaries.

Coroll. 2. The sensible Elevation or Tide would be only double, as if it arose from one of the Luminaries, but such as from the Composition of their attractive Powers were to be expected.

Coroll. 3. When therefore the Sun and Moon's Forces unite, or when they are situate in or near the same Line through the Centre of the Earth, which happens only at the New and Full Moon, the Tides must be the greatest; and when their Forces contradict each other, or when they are situate in or near the middle between the New and Full, at the Quadratures; the Tides must be the least. In the former Case, the visible Flux and Reflux arises from the Sun; and in the latter, from the Difference of their Attractions; and so the Spring-Tides, after the New and Full, are the Result of the Elevation and Depression of both the Sun and Moon conjointly; but the Nepe-Tides, after the Quadratures, the Result only of the prevailing Elevation and Depression of the Moon above those of the Sun; and by consequence, exactly agreeable to Experience much less than the other.

Coroll. 4. As, if the Luminaries were situate in the Axis of the Earth, the diurnal Revolution would not more expose any Places to their Force one time than another, and no Reciprocation of Flux and Reflux would arise; so the nearer they are to such a Position, the less must such a Reciprocation be, and the farther from such a Position, the greater. On which account, the Elevation or Tide must be greater after the Equinoctial New and Full Moon, than after the Solstitial; and the highest Spring-Tides be those

those after March 10. and September 12. as all Experience attests them to be, and the Situation of the Luminaries near the Equator of the Earth, and farthest from the Poles, does require.

Coroll. 5. *Since by the Vicinity of the Moon, the visible Tides follow her Influence; and since withal our Earth in about $24\frac{3}{4}$ Hours, recovers the same Situation with regard to her; 'tis evident, That in the said Space, each Part of the Ocean must have twice been elevated, and twice depress'd, or had a double Flux, and double Reflux of its Waters, as all Observation assures us it really has.*

LXXXIII. The Elevations or Tides caused by two different Bodies at the same Distance, are always proportionable to the Quantity of Matter in the same attractive Bodies; as from the Force of Gravitation in general, proportionable to the attracting Body, will easily be understood. Vid. Lem. 7. *præ*us.

Thus, if a Comet or Planet, whose Quantity of Matter were ten or twelve times as much as the Moon's, were at an equal Distance with her from the Centre of the Earth, the Tides, whether of the internal Abyss, if such there be, or external Air and Water, would be ten or twelve times as high as those she is the Cause of with us.

LXXXIV. The Elevations or Tides caused by the same, or an equal Body at various Distances, are reciprocally in a triplicate Proportion of such Distances. Thus, if the Moon should approach as near again to the Earth's Centre, as now she is, the Tides would be eight times as high; if thrice as near, twenty seven times as high; if four times as near, sixty four times as high as those she at her present Distance produces.

Corollary 1. *Hence appears (which Dr. Bent- Serm. 8. ley has in part also observ'd) a signal Instance of the Divine Providence respecting the Constitution of*

the World in placing the heavenly Bodies at so vast a Distance from each other, and the greatest at the greatest Distance, that when we consider it, we cannot but be amazed at it. For had they been situate considerably near to one another, they would have caus'd prodigious Disorders; and in particular such destructive Tides, wherever there were vast Quantities of Fluids, or a great Ocean, that neither Plant nor Animal could have avoided its Force, or sustain'd its Fury; which by the wise placing the heavenly Bodies at so vast a Distance is entirely prevented.

Lem. 36. is withal so small, (scarce the 39th Part so big as the Earth, scarce the 3700th Part so big as Saturn, or the 8600th as Jupiter, and scarce above the nine millioneth so big as the Sun) that the Tides so caused are but of some few Feet in height, very moderate, not at all incommodious, nay, in truth, very advantageous to us; which in the other secondary Planets is no less true, and no less remarkable.

Lem. 36. prius.

Fig. 7. LXXXV. Of the two Protuberances produc'd by the Presence of a Comet, or other celestial Body, that which is directly towards that Body, as dbc , is larger and higher than the opposite one, dac . This is *à priori* demonstrable; and tho' it be too small to be observ'd in the Tides of our Earth, yet will it be very sensible in that Case to which the Lemma is hereafter to be apply'd.

LXXXVI.

LXXXVI. If such a double Tide were very great, and should on a sudden be produc'd in a subterraneous Abyfs, on whose Surface an Orb of Earth, fix'd and consolidated together, were situate, it would raise or depress the Regions of that Orb, as it self was rais'd or depress'd; and by putting on the Figure of an *oblong Sphaeroid*, (such as an *Ellipsis* revolving about its longer *Axis* would generate) and thereby increasing its Surface so much, that the Orb of Earth could not fit and inclose it uniformly as before, would strain and stretch the said Orb of Earth, would crack and chap it, and cause Fissures and Breaches quite through the same; or if such there were already, it would afresh open and divide the same. All which is easily understood from what has been already said of a Case very agreeable to this we *Lem. 72.* are now upon; and so can stand in need of no *præis.* farther Explication here.

Corollary 1. *Since in a Comet approaching to a Planet, this Force does increase in a triplicate Proportion of the Distance reciprocally; if the Quantity of the Elevation of the two opposite Tides be known, and the Magnitude of the Comet be known, its nearest Distance will by Calculation be determined: and so if the Elevation be known, and the nearest Distance, the Magnitude of the Comet will thereby be determined also.*

Coroll. 2. *Since therefore from the Knowledge of the nearest Distance, the Magnitude of the Comet is discoverable, both by the Quantity of the Eccentricity of the Earth's Orbit, as in Coroll. 2. to Lem. 55. and by the Elevation of the two opposite Tides as in this, i. e. by two ways, the former of which implies the Increase of the Force in a single Proportion of the Distance reciprocally, and the latter in a triplicate reciprocally; to find a Comet*

which shall comply with both these Methods, is to find one single given Comet of one single Magnitude, and no other. So that by these two ways taken together, the Magnitude of the Comet is exactly determined. For if any other Comet be suppos'd lesser or greater, it must then be nearer or farther off to produce the same Effects; and if it be so much nearer or farther off, as one Phænomenon requires, it will be too near or too far for the other Phænomenon, and so perpetually: so that none but one single Magnitude and one single Distance will correspond to both Phænomena.



B O O K II.

HYPOTHESES.

I. **T**HE Antient *Chaos*, the Origin of our Earth, was the Atmosphere of a Comet.

This Proposition, however new and surprizing, *See the Testimonies* will, I hope, appear not improbable, when I shall have shewn, That the Atmosphere of a Comet *about the Chaos cited at the first Phaenomenon* has those several Properties which are recorded of the ancient *Chaos*: That it has such peculiar Properties besides, as lay a rational Foundation for some of those *Phaenomena* of our Earth, which can scarce otherwise be philosophically explain'd; and that no other Body, or Mass of Bodies now known, or ever heard of in the World, can stand in Competition, or so much as pretend to the same Character, which it so agreeably corresponds to: which will be the Design of, and shall be compriz'd under the following Arguments.

(1.) The Names of these two Bodies, or Systems of Bodies, are exactly the same, and equally agreeable to the Nature of each of them. The original *Chaos*, by the ancient Tradition of the *Phœnicians*, was styl'd, Ἀνὴρ ζοφώδης ἢ πνέυματώδης, and Πνοὴ Ἀέρος ζοφώδης; in *English*, *A dark and stormy Atmosphere*. Which Appellation, (the constant Character of that Mass encompassing the Body of a Comet, and at the same time of the old *Chaos*) if we suppose it to have been as fitly by Antiquity apply'd to the latter, as certainly, Observation being

being Judge, it is to the former ; is as proper a one for our present Purpose, as could possibly be desir'd.

(2.) The main Bulk of the ancient *Chaos*, and of the Atmosphere of a Comet, is a Fluid, or System of Fluids. As to the former, 'tis both necessary to be presuppos'd in order to the succeeding Separation, and regular Disposition of the Parts ; and is confirm'd by all the Accounts of it. But *Moses* himself being express, I shall content myself with his single Testimony ; who not only
 Gen. i. 2. calls it an *Abyss*, but gives it the Style of *Waters*. *Darkness was upon the face of the deep, and the Spirit of God moved upon the face of the waters*. Now, that the main Part of a Comet's Atmosphere is also a Fluid, appears both by its Pellucidness, (a thing unusual in Bodies, but such as are, or once were in a fluid Condition) and by those perpetual Changes and Agitations of Parts within the Regions of it, which in any other than a Fluid are plainly impossible ; and which indeed, withal, have hitherto seem'd so visible and remarkable, that thence Men were ready to imagine the whole Mass to be nothing else but a Congeries of Vapours or Clouds, uncertainly jumbled together, and as uncertainly dissipated again.

(3.) The *Chaos* is describ'd to have been very stormy and tempestuous ; of which some of the ancient Writers take particular notice. To which those frequent and violent Agitations and Changes, those strange, uncertain Hurries of opaque Masses hither and thither, which the *Phænomena* of Comets Atmospheres present us with, most exactly agree.

(4.) The *Chaos* was a mixed Compound of all sorts of Corpuscles, in a most uncertain confus'd and disorderly State ; heavy and light, dense and
 rare,

rare, fluid and solid Particles were in a great measure, as it were at a Venture, mingled and jumbled together. The Atoms, or small constituent Parts of Air, Water and Earth, (to which, together with Fire, the Name of *Element* has been peculiarly apply'd) every one were in every Place, and all in a wild disturb'd Confusion. This is the very Effence, and enters the Definition of a *Chaos*; in which therefore all both do, and must agree. And if any one carefully considers the perpetually various Visage of a Comet's Atmosphere, its vast Extent, the no manner of Order or Method of its several Appearances, and remembers that in some Comets it has in its near Approach to the *Sun*, been scorch'd and burn'd by a Degree of Heat many hundred times as intense as the *Sun's* is with us in the midst of *Summer*, he will not wonder that I assert the Parts of this Atmosphere to be in a perfectly confus'd and *Chaotick* Condition. One might indeed as well, and as reasonably, expect Order and Method in the ruinous Relicks of a City burnt to Ashes, or in the Smoke proceeding from the same, as in several, at least, of those Atmospheres we are speaking of.

(5.) The ancient *Chaos*, just before the Beginning of the six Days Creation, was very dark and caliginous. *Darkness was upon the face of the deep*, says the sacred, and the very same say the prophane Writers. Now, when we every Year see how far that small Company of collected Vapours, of which a Cloud consists, can go towards causing Darkness on the Face of the Earth; we may easily guess how thick the Darkness of the Comet's Atmosphere must needs be, when all those earthy and watery Corpuscles, which flying up and down in the vast Regions thereof, do now so often, and so much obscure the Comet's central Body,

Gen. i. 2.

dy, and are here so very sensible ; when all these, I say, shall rise up, and make a confus'd cloudy Orb on the more confin'd Surface of the Atmosphere of many scores, if not hundreds of Miles thick ; as must happen in the Beginning of its Formation. If this be not sufficient to account for this thick *Darkness on the Face of the Abyss*, I know not what can. So that if we refer the Words of *Moses* to the proper and peculiar Time only, when they are introduc'd, viz. That just before the Beginning of the six Days Creation, that Place of the *Chaos* where afterwards the Earth's Surface and the Air was, had Darkness on its Face ; we have sufficiently here already accounted for it. But if we suppose that the Darkness refers also to all the ancient Time prior to this Creation, and thence object, that the Atmosphere of a Comet, which is a transparent Fluid, and illuminated continually, cannot be that dark *Chaos* in *Moses* ; I answer, That tho' indeed, “ All the upper Part of the
 “ Atmosphere of a Comet, thro' which we see
 “ the fixed Stars, is transparent, yet the lowest
 “ Part next the *Nucleus*, or dense Body, seems
 “ to be opaque and dark like a very thick Mist,
 “ so as to hide the *Nucleus* it self from our Sight,
 “ and cause *Darkness upon the Face of the Deep*.
 “ For the Changes which some observe in the
 “ *Nucleus* of Comets are to be suppos'd not in the
 “ solid Body, but in the cloudy Bottom of the
 “ Atmosphere, which next encompasses the *Nu-*
 “ *cleus*. And this *Darkness upon the Face of the*
 “ *Deep*, might continue till the Comet was grown
 “ cold, and all the denser Part of the Atmo-
 “ sphere was subsided ; and be greatest while
 “ those denser Parts were in a State of coagulating
 “ and subsiding ; i. e. at the particular Time di-
 “ rectly referr'd to in the *Mosaick History*.

(6.) Our

(6.) Our upper Earth, the Product of the ancient *Chaos*, being in all Probability founded on a dense Fluid or Abyfs, as will appear in the Sequel, the main Part of the Fluid of that ancient *Chaos*, must, by consequence, have been such a dense and heavy one as is here mention'd. And indeed, 'tis in it self but very reasonable, if not necessary, to allow the inferior Parts of a fluid *Chaos* to have been compos'd of much denser and heavier Masses than the superior, or than Water, the main visible Fluid of our Globe. For, if we consider the Matter in any sort according to the Law of specifick Gravity, all heavy Fluids must, at least, as certainly be near the Centre, as like heavy Solids; and 'tis but mechanical to allow that in a confus'd Fluid *in some measure*, as well as *exactly* in a digested one, the Fluids contain'd in the inner Regions must be much heavier than those at or near the outer Surface thereof. But besides, 'twill be hard to account for the confus'd moving State of the earthy Parts, or, which is much the same, the Fluidity of the entire *Chaos*, without allowing a much greater Quantity of Fluids in it, than what we now see with us, the Waters of our present Earth; and those of a Density and Gravity fit to retain their Posts, as well nearer the central, as the superficial Parts. And that on this account, (of the Comet's Atmosphere's fix'd and dense Fluid) 'tis peculiarly adapted to the aforesaid Description of the *Chaos*, is evident by what has been already observ'd of the same; to which I refer the Reader Coroll. 2. Lem. 68. prius. for Satisfaction.

(7.) Whereas very many, and very considerable *Phænomena* of Nature, (which Dr. Woodward Essay, Part 3. Sect. 1. has excellently observ'd) as well as ancient Tradition, seem to require and suppose a central Fire, or

or internal Heat diffusing warm and vigorous Steams every way from the Centre to the Circumference of the Earth; and whereas 'tis very difficult on the common *Hypotheses*, or indeed on any hitherto taken notice of, to give a mechanical and philosophical Solution of the same; if we will but allow the Proposition we are now upon, that the Earth, in its *Chaotick* State, was a Comet, a most easy and mechanical Account thereof is hereby given, and the *Phænomena* of Nature render'd plain and intelligible. For a Comet, besides its thinner fluid Atmosphere, consisting of a large, dense, solid, spherical Body, [or Vid. Lem. *Loadstone*;] and sometimes approaching so near the 68. *prius*. *Sun*, that the Heat acquir'd then, though sooner failing in the thinner and expos'd Atmosphere, will not do so in the central solid, under very many thousands of Years; nothing can better suit the Case of our present Earth, than to allow a Comet's Atmosphere to have been her *Chaos*; and the central Body of the Comet, the Source and Origin of that central Heat, which our Earth appears still to inclose within it.

However, it must here be observ'd, that altho' with some, we should suppose all the *Phænomena* before hinted at to be accountable without any internal Heat, yet will not this disagree with the present *Hypothesis*, that the Earth was once a Comet; because some Comets approach so very near the *Sun*, (as that famous one in 1680, 1681.) that their central Solids must be exceeding hot, and retain the same a long Time; and others (as that in 1664) descend not so low as the *Orbis Magnus* of the Earth, and so are never heated so much as our Earth is in Summer; and therefore tho' the Acknowledgment of a vigorous central Heat is a great Argument that the Earth was once a Comet,

met, as solving what is otherwise insoluble, yet is not the Denial of the same any Argument against it: because it may as easily be suppos'd to have been one of those whose central Solids would not be so violently heated, as one of those which would have been so.

(8.) The Bigness of Comets and of their Atmospheres, agrees exactly with the Supposition we are now upon. For tho' the Atmospheres are 10, *Lem. 60,* or perhaps 15 times in Diameter as big as the 61. *præd.* central Bodies, (which yet have been formerly observ'd to be near the Magnitude of the Planets) and thereby of a much larger Capacity than this Argument supposes; yet if, from that thin, rare, expanded State in which they now are, they were suppos'd to subside or settle close together, and immediately rest upon the central Body; as on a Formation they must do; the entire Mass would make much such Bodies in Magnitude, as the Planets are: as Astronomers, from the Observations made about them, will readily confess. So that when, to all the other Inducements to believe these Atmospheres to be the same Masses of Bodies we call *Chaos's*, (from one of which all Antiquity, sacred and prophane, derive the Origin of our Earth;) it appears that the Magnitude is also exactly correspondent; I know not what can be alledg'd to take off or weaken the Force of them. Which general Conclusion might be confirm'd by some other Similitudes between them and the Planets, observable in the succeeding Theory, or probably deduc'd from their *Phænomena*; which I shall not at present insist particularly upon. So that on the whole Matter, upon the Credit of the foregoing Arguments united together, and conspiring to the same Conclusion; I may, I think venture to affirm, That as far as hitherto present Nature

Nature and ancient Traditions are known, 'tis very reasonable to believe, that a *Planet* is a *Comet* form'd into a regular and lasting Constitution, and plac'd at a proper Distance from the Sun in a *circular* Orbit, or one very little *eccentric*; and a *Comet* is a *Chaos*, i. e. a *Planet* unform'd, or in its primæval State, plac'd in a very *eccentric* one: and I think I may fairly appeal to all that the most ancient History, or solid Philosophy can produce hereto relating, in Attestation to such an Assertion. Especially considering withal,

(9.) Lastly, That there is no other Pretender, no other Mass of Bodies now known, or ever related to have been known in the whole System of Nature, which can stand in Competition, or so much as seem to agree to the Description of the ancient *Chaos*, but that which is here assign'd and pleaded for. Now this I am secure of, and all will and must grant: They cannot but be forc'd to confess, that (the Atmosphere of a Comet set aside) they have no other *Idea* of the Nature and Properties of that Mass of Bodies call'd a *Chaos*, but what prophane Tradition, with the Concurrence of the holy Books, afford them; without any visible Instance or Pattern in Nature. Which Acknowledgment, join'd to the remarkable Correspondence of the Particulars before-mention'd; and the no Objection of any Moment, as far as I see, to be produc'd to the contrary; is, I think, a mighty Advantage in the present Case. All that can reasonably be requir'd farther is, that the *Phænomena* of the Earth, to be superstructed on this Foundation, and deriv'd successively through the several Periods, to the Consummation of all Things, prove Coincidents to this *Hypothesis*, and confirm the same: which being the Attempt
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of the following Theory, must be by no means here pretended to before-hand; but left to the impartial Judgment of the Reader, when he is arriv'd at the End of his Journey, and digested the whole Scheme. From the entire and conjoint View whereof, and not from any Particulars by the way occasionally reflected on, a prudent and well-grounded Sentence is to be pass'd upon it, and upon several of the *prior* Conclusions themselves also. However, since here is a known and visible Foundation to depend on; and the Reader is referr'd to no other *Chaos* than what himself has seen, or, 'tis probable, may in a few Years have Opportunity of seeing; it must be at the least allow'd a fair and natural Procedure, and of the Consequences whereof every thinking and inquisitive Person will be a proper Judge. The Reasonings proceeding, without begging any precarious *Hypothesis* at first, of the Nature of that old Fund and Promptuary whence all was to be deriv'd, or sending the Reader to the utmost Antiquity for his Notion thereof; to which yet, in the most authentick Accounts of the Primitive *Chaos* now extant, I fear not to appeal, and submit my self.

If it be objected, that because Comets have no *Satellites* revolving about them, as the Earth and others of the Planets have, therefore the Planets cannot have proceeded from Comets; I answer, that I am not satisfy'd that no Comets have secondary Comets or *Satellites* revolving about them. I think the Observations we have yet made about Comets are not nice and numerous enough to determine this Point; nay rather, what the Histories of many Comets relate about the various Shapes and Figures and Positions of many Comets, or their Tails, seems to be hardly accountable, unless we allow lesser Comets to have now and then been

Companions to the greater, and by their various Positions and other Circumstances, to have occasion'd some at least of that Variety and Strangeness in many of their *Phænomena* above-mention'd. And if it be again objected, that 'tis not probable our Earth should have been once a Comet, because in all past History no other Comet has been observ'd to stop and become a Planet; I answer, That as the Earth is perfectly inconsiderable in comparison not only of the Universe, but also of the *Solar System*; so I believe is 6000 or 7000 Years, the Period I suppose of its Duration; much more about 2000 Years, the almost utmost Reach of our Astronomical Histories, to the Duration of the whole System. Worlds, 'tis probable, are not form'd every Age, nor perhaps every hundredth, or thousandth Age neither.

II. The Mountainous Columns of the Earth are not so dense or heavy as the other Columns.

This Proposition will also, I imagine, be new and unexpected to very many; but I hope the following Arguments, which I shall very briefly propose, will prove it to be no unreasonable or precarious one.

(I.) Mountains, so far as we can penetrate into them, [at least if ever we do penetrate into the true Antediluvian Mountains themselves; which is also to be suppos'd in some other Arguments] are usually stony and rocky, and by consequence lighter than the main Body of the Earth. For tho' Stone be somewhat heavier than the uppermost *Stratum* or *Garden Mould*, as some style it; yet 'tis considerably lighter than that beneath the same. For if we compare its Weight with that in
the

the Bottom of our Mines, which is alone considerable to our Purpose, (our upper *Strata*, as will hereafter appear, being generally factitious, or acquir'd at the Universal Deluge) we shall be forc'd to own the Necessity of the Consequence of the present Argument. The specifick Gravity of Stone is to that of Water, as 14 to 5 $\frac{1}{5}$, but the specifick Gravity of the Earth at the Bottom of our Mines is to that of Water as 3 to 1, sometimes as 4 to 1, nay, sometimes almost as 5 to 1, and therefore to be sure considerably denser and heavier than Stone: So that were the mountainous Columns of the Earth entirely made up of Stone, they would (without the Consideration of those empty Caverns they enclose) be plainly the lightest Parts of the whole Earth.

(2.) Those very dense and heavy Corpuscles of Gold, Lead, Silver, and other such like Metals and Minerals, are mostly, if not only, found in the Bowels of Mountains. Now, since the Gravity of these Bodies is so great, that in a regular Formation they ought to have seated themselves, one would think, much nearer the Centre than they now are; to account for such their Position, it must be suppos'd, that the Columns under them, and the Earth among them, were lighter and rarer than the neighbouring Columns did afford; that upon the whole, the entire *Compositum* or Mass taken together, may be allow'd to be, if not lighter, yet, at least, not heavier than that of any other Column. So that by a just, tho' a little surprizing way of Reasoning, from the greater specifick Gravity of some Parts of the mountainous Columns, the less specifick Gravity of the whole is inferr'd.

(3.) Mountains are the principal Source and Origin of Springs and Fountains. Now Dr. Wood.

ward, from his own Observations, asserts, that these are neither wholly deriv'd from Vapours condens'd in the Air at the Tops of Mountains, nor from mere Rains, or Fall of Moisture, as several have differently asserted; but from the Waters in the Bowels of the Earth; and that 'tis a Steam or Vapour rais'd by the subterraneous Heat which affords no small Part of their Waters to them. On which Hypothesis, which I take to be the truest and most rational of all others, the Vapours appear to have a more free and open Vent or Current up the mountainous Columns, than the neighbouring ones; and consequently, they are more rare, lax, and porous, or less dense and weighty than the others.

(4.) All *Volcano's*, or subterraneous Fires, are in the Bowels of some Mountain, to which a Plain or a Valley was never known to be liable. Which Observation affords a double Argument for such a Levity and Rareness as we are now contending for; the one, from the Temper of an inflammable Earth, sulphurous and bituminous; which being in part made up of oily Particles, the lightest Fluid we have, must in likelihood be the lightest of all *Strata* whatsoever; the other, from the free Admission of Air into the Bowels of these Mountains; without which no Fire or Flame can be preserv'd; which also infers such a Porosity or Laxness as we are now concern'd to prove.

(5.) Mountainous Countries are chiefly subject to Earthquakes, and consequently are as well sulphurous and inflammable, as hollow and cavernous, loose and spongy in their inward Parts; without which Properties the *Phænomena* of Earthquakes were difficultly accountable: especially according to Dr. *Woodward's Hypothesis* of them; who deriving them from Steams of subterraneous Heat

Heat ascending from the central Parts, and collected in great Quantities together, must by consequence own that the Bowels of Mountains, so commonly subject to Earthquakes, are most pervious, porous, and cavernous of all other. All which Arguments, especially taken together with some other Coincidents hereafter observable, will, I hope, be esteem'd no inconsiderable Evidence of the Truth of the Proposition we are now upon.

III. Though the *Annual Motion* of the Earth commenc'd at the Beginning of the *Mosaick* Creation; yet its *Diurnal Rotation* did not till after the Fall of Man.

Tho' I cannot but expect that this will appear the greatest *Paradox*, and most extravagant Assertion of all other, to not a few Readers; yet I hope to give so great Evidence for the same from sacred as well as prophane Authority, that competent and impartial Judges shall see reason to say, that if it be not sufficient to force their Assent, yet 'tis such as they did not expect in so surprizing, remote, and difficult a Case; the Records relating to which (the sacred Ones excepted) are so few, and so dubious; and the constant Opinion of the World, within the Memory of History, so fix'd and settled on the contrary side. Let it only be, by way of Preparation, remark'd, that the annual and diurnal Motions are in themselves wholly independent on each other, as was before observed; and consequently, that 'tis as rational to suppose the former without the latter, if there be Evidence for the same, in the original State of Nature, as 'tis to believe them capable of being

conjoin'd, from the known *Phænomena* of the World, in the present State. Let it also be observ'd, that there is yet no Evidence that either the central Bodies of any of the Comets, or that even some of the Planets, which undoubtedly have an annual Motion about the Sun, have yet any diurnal Rotation about *Axes* of their own. And let it, lastly, be consider'd, that since the diurnal Rotation must have an Original, a Time when it began; that Time may as rationally and naturally be suppos'd after the Fall, as before the Creation, or six Days Work; and which was the true and real one, must be determin'd by the Testimonies of Antiquity, or other collateral Arguments, to be from thence, or from the *Phænomena* of Nature, ancient or modern, deriv'd and inferr'd. Which things being suppos'd, I shall thus attempt to prove the present Assertion.

(I.) If the primitive State of Nature before the Fall, had those peculiar *Phænomena* or Characters which certainly belong to a Planet before its diurnal Rotation begun; and are as certainly impossible in the present State of the Earth revolving about its own *Axis*; 'tis plain the Assertion before us is true and real: but that those peculiar *Phænomena* or Characters did belong to that primitive State, the Testimonies of sacred and profane Antiquity, to be presently produc'd, do make appear; and, by consequence, the Assertion before us is true and real.

(II.) I shall shew, that the present *Phænomena* of the Earth do prove that its diurnal Motion did not commence till some time after its annual, and by consequence, in all Probability, not till after the Fall of Man.

(III.) I shall assign the probable mechanical Cause of this Commencement of the diurnal Motion,

tion, after its annual had continued some Time; and shew, that that Cause also is agreeable to the present *Phænomena* of Nature, and of the Earth.

As to the first way of Proof, the *Phænomena* or peculiar distinguishing Characters here intended, have been already mention'd; and are these five.

(1.) A Day and a Year were all one. (2.) The Sun ^{*Lem. 73.*} and Planets rose in the *West*, and set in the *East*. ^{*prior.*}

(3.) There was through the whole Earth a perpetual *Equinox*. (4.) The Ecliptick and Equator were all one; or rather, the latter was not in Being, but all the heavenly Motions were perform'd about the same invariable *Axis*, that of the former. (5.) To such as liv'd near the Ecliptick, the Poles of the same (or of the World, they being then not different) were neither considerably elevated nor depress'd, but at or near the Horizon. These are the certain and undeniable Characters of such a State: and that they belong'd to the primitive State of our Earth before the Fall, I am now to prove.

(1.) In the primitive State of the World, Days and Years were all one. Which Assertion I endeavour to evince by the following Arguments.

(1.) On this *Hypothesis*, the Letter of *Moses* is as exactly follow'd as in the contrary one. 'Tis agreed that *Moses* calls the several Revolutions of the Sun, in which the Creation was perfected, *Days*, every where in that History. Now as a *Year* is properly the Succession of the four several Seasons, Spring, Summer, Autumn and Winter, arising from *one single* Revolution of the Earth about the Sun; so a *Day* is the Succession of Light and Darkness *once*; or the Space of *one single* apparent Revolution of the Sun from any certain Semimeridian, above or below the Horizon, till its Return thither again. Now, in the Case before us, both these Periods

are exactly coincident; and both are perform'd in the same Space of Time: which Space therefore, in equal Propriety of Speech, belongs to either, or both those Names indifferently; and, by consequence, may with the exactest Truth and Propriety be styl'd a *Day* or a *Year*. Which Thing duly consider'd, if I had no positive Evidence for the Proposition before us, yet, setting aside Prepossession, I had an equal Right and Pretence to Truth with the common Expositors; I keeping equally close to the Letter of the sacred History. (2.) This *Hypothesis* gives a rational Account of the Scripture Style, wherein a *Day*, even in after-Ages, very frequently denotes a *Year*; as is commonly taken notice of by Expositors. Thus by *Moses* himself, the Word *Day* is not only, in the very Recapitulation of the Creation, us'd for the entire *Six*:

Gen. ii. 4, 5. (*These are the generations of the heavens and the earth when they were created, in the Day that the Lord God made the earth and the heavens, and every plant of the field before it was in the earth, and every herb of the field before it grew.*) But, in other Places, as it seems, for the Space of a *Year*.

Cap. iv. 3. *And at the end of Days, or after some Years, it came to pass that Cain brought of the fruit of the*

C. v. 4, 5. *ground an offering unto the Lord. The Days of Adam, after he had begotten Seth, were eight hundred Years. And all the days that Adam lived were nine hundred and thirty years, and he died. And so of the rest of the Genealogies in that Chapter.*

Jud. xvii. 10. *Thus in others of the holy Writers: I will give thee ten shekels of silver by the days, i. e. per annos, by the years, or every year. The like Phrases we*

2 Sam. ii. 11. *have of David: The number of days that David was king in Hebron, over the house of Judah, was seven years and six months. The days that David*

1 Kings ii. 11. *reigned over Israel, were forty Years. So what was in the Law, Bring your tythes after three years, is*

in the Prophet, *Bring your Tithes after three days.* Amos iv. Thus, 'tis not a little remarkable, that what in ⁴ the Hebrew is, *It came to pass in process of time,* 2 Chron: *at the end of two days, Jehoram's bowels fell out,* xxi. 19. *by reason of his sickness;* appear'd to be so plainly meant of so many Years, that our Translators not only render it so, but do not so much as put the original Reading into the Margin, as in such Cases they usually do. Which ways of speaking, with others that follow, may seem alluded to, and explain'd by these two, tho' themselves somewhat of a different Nature. *Your Children,* Num. xiv. says God to the Israelites, *shall wander in the wilderness forty years; after the number of the days in which ye searched the land, even forty days, each day for a year, shall you bear your iniquities, even forty years.* Lye thou, says God to the Prophet Ezek. iv. *Ezekiel, on thy left side, and lay the iniquity of* 4, 5, 6. *the house of Israel upon it; according to the number of the days that thou shalt lye upon it, thou shalt bear their iniquity: For I have laid upon thee the years of their iniquity, according to the number of the days, three hundred and ninety days; so shalt thou bear the iniquity of the house of Israel. And when thou hast accomplished them, lye again on thy right side; and thou shalt bear the iniquity of the house of Judah forty days; I have appointed thee a day for a year.* But what I mainly and principally intend here, is, that known, frequent, and solemn way in the Prophetick Writings of determining *Years* by *Days*; being indeed the constant Method in all the Prophecies belonging to the Christian Church; the Instances of which are very obvious; some whereof I shall here barely quote for the Reader's Satisfaction; (and more in a Case so notorious and remarkable, need not here be done.) *How long shall be the vision concerning the* Dan. viii. *daily* 13, 14.

daily sacrifice, and the transgression of desolation, to give both the sanctuary and the host to be trodden under foot? And he said unto me, Unto two thousand three hundred evening mornings (or such days as were referr'd to in the History of the Creation,)

- Chap. xii. then shall the sanctuary be cleansed. From the time
 11, 12, 13. that the daily sacrifice shall be taken away, and the abomination that maketh desolate be set up, there shall be one thousand two hundred and ninety days. Blessed is he that waiteth, and cometh to the one thousand three hundred five and thirty days. But go thou thy way till the end be; for thou shalt rest,
 Apoc. xi. and stand in thy lot at the end of the days. I will
 3. give power unto my two witnesses, and they shall prophesy one thousand two hundred and sixty days, clothed in sackcloth. The woman fled into the
 Chap. xii. wilderness, where she hath a place prepared her of
 6. God, that they should feed her there, one thousand two hundred and sixty days. Agreeably whereto, a Week, consisting of seven Days, denotes seven Years; and a Month, consisting of thirty Days, denotes thirty Years, in the same Prophetick Writings. Thus, in that most famous of all Prophecies, concerning the Death of the Messias:
 Dan. ix. Seventy weeks are determined upon thy people, and
 24, 25, 26. upon thy holy city; to finish the transgression, and to make an end of sins, and to make reconciliation for iniquity, and to bring in everlasting righteousness, and to seal up the vision and prophecy, and to anoint the most holy. Know therefore, and understand, that from the going forth of the commandment to restore and build Jerusalem, unto the Messiah the Prince, shall be seven weeks, and sixty and two weeks; the street shall be built again, and the wall, even in a straight of times. And after the sixty and two weeks shall Messiah be cut off: but
 Apoc. xi. not for himself. The holy city shall they tread under
 2. foot.

foot forty and two months. Power was given to Chap. xiii.
the Beast to continue forty and two months. All 5.

which Expressions, with others of the same Nature, are not accountable; I mean, there is no satisfactory Reason can be given, why a *Day* should so frequently denote a *Year* in the sacred Writings, on any other *Hypothesis*. We usually, indeed, content our selves in these Cases with the bare knowing the Meaning of Scripture Expressions, as if they were chosen at a Venture: and so, for instance, finding a *Day* to represent a *Year* in the same Books, we rest satisfied, without enquiring why a *Day*, rather than an *Hour*, a *Week*, or *Month*, (the two latter of which Terms are yet us'd by these Authors) were pitch'd upon to signify the before-mention'd Space to us; or why, if the word *Day* must be made use of, it must mean a determinate just *Year*, rather than a *Week*, or a *Month*, so frequently in the sacred, especially in the prophetick Writings. But 'tis very supposable, that 'tis our Ignorance or Unskilfulness in the Style of Scripture, and those Things therein delivered, (not the Inaccuracy of the Writers themselves) which occasions our lax and general Interpretations. It will sure at least be allow'd me, that wherever not only the Meaning of Phrases, but the Original and Foundation of such their Meaning, is naturally and easily assignable, an Account thereof is readily to be embrac'd. And certainly the primitive *Years* of the World being once suppos'd to have been *Days* also; and call'd by that Name in the History of the Creation, this Matter will be very easy; the succeeding Style of Scripture will appear only a Continuation of the primitive; and fitted to hint to us a Time wherein a *Day* and a *Year* were really the same: and this

Gen. ii. 1,
2, 3.

this without any Diminution of the true Designs of the prophetick Numbers; I mean the involving their Predictions in so much, and no more Obscurity, as might conceal their Meaning till their Completion, or till such Time at least as the Divine Wisdom thought most proper for their Manifestation in succeeding Ages. So that this Argument demonstrates the present Exposition to afford a natural Foundation of accounting for such ways of speaking in the holy Scriptures, which otherwise are, as to their Occasion and Original, unaccountable; and consequently, proves it to be as truly agreeable to the *Style*, as the former did to the *Letter* of the sacred Writings. (3.) The six *Days* of Creation, and the seventh of Rest, were, by divine Command, to be in after-Ages commemorated by *Years* as well as by *Days*; and so in Reason answer'd alike to both those Denominations. 'Tis evident, that the Works of the Creation were compleated in six *Evenings* and *Mornings*, or six Revolutions of the Sun, call'd *Days*; and that the seventh was immediately set apart and sanctified as a *Day* of Rest, and Memorial of the Creation just before compleated: and 'tis evident that this Sanctification of the seventh, as well as the Operations of the six foregoing, belong'd to the primitive State of the World before the Fall. Now that we may know what sort of *Days* these were, 'twill be proper to enquire into the ensuing Times; and observe, after the Distinction of *Days* and *Years* undoubtedly obtain'd, what constant Revolutions of six for Work, and a seventh for Rest there appear; or in what Manner, and by what Spaces, these Original ones were commemorated; which will go a great way to clear the Point we are upon. And here, 'tis evident, that when God gave Laws to
the

the *Israelites*, he allow'd them six ordinary *Days* of Work, and ordain'd the seventh for a *Day* of Rest or Sabbath; in Imitation and Memory of his Working the first six, and Resting or keeping a Sabbath on the seventh *Day*, at the Creation of the World. This the Fourth Commandment so expressly asserts, that 'tis past Possibility of Question. 'Tis moreover evident, that God, upon the Children of *Israel's* coming into the Land of *Canaan*, ordained, (with reference, as 'tis reasonable to suppose, to the same primitive State of the World, the six *Days* of Creation and the Sabbath,) *That* ^{Lev. xxv.} *six Years they should sow their fields, and six Years* ^{3, 4.} *they should prune their vineyards, and gather in the fruits thereof; but in the seventh Year should be a Sabbath of Rest unto the land, a Sabbath for the Lord.* They were neither to *sow their Field*, nor *prune their Vineyard*. Then was the land to keep a ^{2.} *Sabbath unto the Lord*. So that if we can justly ^{Vid. Deut.} presume that the primary Spaces of the World, ^{xv.} here referr'd to, were proper *Evenings* and *Mornings*, or Natural *Days*, because they were represented and commemorated by six proper and natural *Days* of Work, and the seventh of Rest; I think 'tis not unreasonable to conclude they were proper and natural *Years* also; considering they appear to have been among the same People, by the same divine Appointment, represented and commemorated by these six proper and natural *Years* of Work, and the seventh of Rest also. Nay, if there be any Advantage on the side of natural *Days*, from the Expressness of the Reference they had to the Primitive ones, (which the Fourth Commandment forces us to acknowledge,) there will appear in what follows somewhat that may justly be esteem'd favourable on the side of *Years*. Besides the six *Days* for Work, and the seventh

seventh for Rest, the *Jews* were commanded (on the same Account, as we may justly suppose) *to number from the Passover seven times seven Days,* *or seven Weeks of Days,* and at the Conclusion of them to observe a solemn Feast, called the Feast of Weeks or of Sabbaths, once every Year. In like manner, besides the *Yearly Sabbath*, as I may call it, or the seventh *Year* of Rest and Release after the six *Years* of Work, the *Jews* were commanded (on the same Account, as we may justly suppose,) *to number seven Sabbaths of Years, seven times seven Years;* and at the Conclusion thereof to celebrate the great *Sabbatical Year*, the *Year of Jubilee*: *They were neither to sow, nor reap, nor gather in the grapes; but esteem it holy, and suffer every one to return to his Possessions again.* Where that which is remarkable is this; that tho' the *Sabbatical Days*, and *Sabbatical Years*, equally return'd by perpetual Revolutions immediately succeeding one another; yet the Case was not the same as to the *Feast of Weeks* at the End of seven times seven *Days*; that following the *Passover*, and not returning till the next *Passover* again, and so was but once a *Year*: Whereas its corresponding Solemnities, the *Jubilees* or great *Sabbatical Years*, at the End of seven times seven *Years*, were as the former, to return by perpetual Revolutions immediately succeeding one another for all future Generations. All which duly consider'd, I think upon the whole, 'tis but reasonable to conclude, That seeing the primitive Spaces, or Periods of Work and Rest, appear by Divine Appointment, to have been commemorated among the *Jews* by *Years* as well as by *Days*, the same primitive Spaces or Periods were equally *Days* and *Years* also. (4.) The Works of the
Crea-

Creation, by the sacred History, concurring with ancient Tradition, appear to have been leisurely, regular, and gradual, without any Precipitancy or Acceleration, by a miraculous Hand on every Occasion: Which is impossible to be suppos'd in those *Days* of twenty four short Hours only; but if they were as long as the present *Hypothesis* supposes, they were truly agreeable and proportionable to the same Productions. Which Consequence will be so easily allow'd me, that I may venture to say, that as certain as is the regular and gentle, the natural and leisurely Procedure of the Works of the Creation, (of which I know no good Reason, from any Warrant sacred or prophane, to make any question;) so certain is the Proposition we are now upon, or so certainly the primitive *Days* and *Years* were all one. (5.) Two such Works are by *Moses* ascribed to the third *Day*, which (if that were not longer than one of ours now,) are inconceivable and incompatible. On the former Part of this *Day*, the Waters of the Globe were to be drain'd off all the dry Lands into the Seas; and on the same *Day* afterward, all the Plants and Vegetables were to spring out of the Earth. Now the Velocity of running Waters is not so great, as in a Part of one of our short *Days*, to descend from the middle Regions of the dry Land into the Seas adjoining to them; nor if it were, could the Land be dry enough in an Instant for the Production of all those Plants and Vegetables, which yet we are assur'd appear'd the same *Day* upon the Face of it; which Difficulties vanish, if we allow the primitive *Days* to have been *Years* also; as will more fully be made appear in due Place. (6.) Whatever might possibly be said of the other *Days* Works, by recurring to the divine miraculous Power; (which

Gen. i.
9-13.

Gen. i.
& ii.

(which yet is here not only unnecessarily, and without Warrant from the sacred History it self, but sometimes very *indecently* done) yet the numerous Works ascrib'd to the sixth *Day* plainly shew, That a Space much longer than what we now call a *Day*, must have been referr'd to in the sacred History. The Business of the sixth *Day* includes evidently these following Particulars. (1.) The Production of all the brute dry-land Animals. (2.) The Consultation about, and the actual Creation of the Body, and Infusion of the Soul of *Adam*. (3.) The Charter or Donation of Dominion over all Creatures, bestow'd on *Adam*. (4.) The Exercise of Part of that Dominion, or the giving Names to all the dry-land Animals: which sure suppos'd some acquir'd Knowledge in *Adam*, some Consideration of the Nature of each Species, some Skill in Language, and the Use of Words; and withal, some proportionable *Time* for the gathering so great a Number of Creatures together, and for the distinct Naming of every one. (5.) When on this Review it appear'd, that among all these Creatures there was not a Meet-help, or suitable Companion for him; God then cast him into a *deep Sleep*, (which 'tis probable lasted more than a few Minutes, to deserve that Appellation;) *took out one of his Ribs, closed up the Flesh instead thereof, and out of that Rib made the Woman*. (6.) After this, God brings this Woman to *Adam*; he owns her Original, gives her an agreeable Name, takes her to Wife, and they together receive that Benediction, *Increase and Multiply*. (7.) God appoints them, and their Fellow-Animals, the Vegetables for Food and Sustenance. All which (to omit the *Jews* Tradition of the Fall of Man this sixth *Day*, and such Things presuppos'd thereto which must belong to it, even by the *Mosaick* History

Vid. Bishop
Patrick on
Gen. in
initio.
Gen. ii. 4,
&c.

story it self) put together, is vastly more than is conceivable in the short Space of one single Day, in the vulgar Sense of it. 'Tis true, *God Almighty* can do all Things in what Portions of Time he pleases. But 'tis also true, (as Bishop *Patrick* well observes in a like Case) that *Man cannot*. He must have Time allotted him, in Proportion to the Business to be done, or else 'tis not to be expected of him. And 'tis plain, that *Adam* and *Eve* were mainly concern'd in the latter Actions of this Day: So that by a just and necessary Consequence, that Day in which they went through so many and different Scenes, and perform'd so many Actions, requiring at least no small Part of a Year; and that after themselves and all the dry-land Animals had been on the same Day produc'd, was certainly such a Day as might be proportionate to such Operations, and not shorter than a Year, which the present *Hypothesis* allows in the Case.

(7.) If the History of the Fall of Man be either included in the sixth Day, according to the ancient Tradition of the *Jews*, which I confess to be very improbable; or belong to the seventh, as might, by coming as near as possible to such old Tradition, more probably be allow'd: on either of these Suppositions, there is the greatest Necessity imaginable of supposing such a Day much longer than is commonly done. Which, I think, is of it self so plain, that I need not aggravate the Matter, but leave it to the free Consideration of the Reader. (8.) A Day is, I think, no where in the whole Bible express'd by Evening-Mornings [*Νυχθήμερα*] but in this History of the *Mosaick* Creation, and in one of the Predictions of *Daniel*; where a famous Vision is styl'd the *Evening-Morning Vision*. Now it having been elsewhere prov'd, that there the Day or *Evening-Morning* denotes a Year, it

O

will

On Gen.
iii. init.
Essay on the
Revela-
tion,
Lem. i.

will be thence very probable, that in the *Mosaick* Creation, whose Phrase is imitated and referr'd to there, it must signify the same Thing, and be in like manner understood of a Year also. (9.) To all these Arguments from Scripture and the Nature of Things, let me add one very surprizing Testimony of Antiquity to the same Purpose, which a Friend of mine since the first Edition suggested to me; namely, that of *Empedocles* in *Plutarch*; which coming unexpectedly so entirely home to our Point, and so exactly determining the Time when the Day was of this extraordinary Length, namely, at the first Origination of Mankind; may be look'd upon as decretory in the present Case; and 'tis this: Ἐμπεδοκλῆς ὅτε ἐξῆν ἅπαντο ἃ ἀνθρώπων γένεσιν ἐν τῇ γῆς, ποσά τινα χρόνον τῷ μήκει ἔχοντα, καὶ πὸ βραδυπορεῖν πὸν ἥλιον, πλὴν ἡμέραν, ὅποση νῦν ἐστὶν ἡ δεκάμηνος. 'Twas the Doctrine of Empedocles, that when Mankind sprang originally from the Earth, the Length of the Day, by reason of the Slowness of the Sun's Motion, was equal to ten of our present Months. Which if we allow to refer to the Day-time alone, I mean the Space of the Sun's being above the Horizon, which is a common Acceptation of the word Day; accords so exactly with my Hypothesis, as will hereafter appear, that nothing can do more so; and renders all other additional Reasonings less necessary. In fine, all these Arguments to me appear very satisfactory, and evince, that the first distinguishing and peculiar Character of such a primitive State of Nature as was before-mention'd, did really belong to our Earth before the Fall, and that then a Day and a Year were exactly one and the same Space of Time.

(2.) In the primitive State of the World, the Sun and Planets rose in the West, and set in the East, contrary to what they have done ever since.

This

Plut. de
Placit.
Philos. l. 5.
c. 18.

This may seem to have been the Foundation of that Story in *Herodotus*, who tells us, That the *Lib. 2.*
Sun, in the Space of 11,340 Years, four times in- *c. 142.*
 verted his Course, and rose in the *West*. But
 what I mainly depend on, is that Discourse in
Plato, who relating some very *ancient Traditions* *Plat. Polit.*
 (as he expressly says they are, and deliver'd by *p. 175.*
 our first Parents to their Posterity) about the pri- *E. F.*
 mitive State of Things, and what a mighty and re-
 markable Change was effected by a certain mighty
 and remarkable Alteration in the heavenly Mo-
 tions, (which Alteration in general deserves also
 to be taken notice of, as agreeing so well with
 the present *Hypothesis*) the most surprizing, and
 of the greatest Consequence of all others, and
 the Cause of suitably surprizing and considerable
 Effects in the present State of Nature, makes it
 to be this Change of the Way or Course of the
 heavenly Bodies, which is the Consequence of the
 present Assertion. For the grand thing, of which
 he had spoken so highly, is this; *Ἐστὶ γὰρ ἔν δὴ τῇ* *Plat. Polit.*
αὐτῇ, τὸ πῶς τῆ παντὸς φορεῖν, τοτὲ μὲν, ἐφ' ᾧ νῦν κυ- *P. 175. B.*
κλείῃ, φέρεσθαι, τοτὲ δ' ὅπῃ τὰναντία. The Motion of the
Universe sometimes revolves the same way that it does
now, and sometimes the contrary way. And again, *Ib. p. 174.*
Ἀλλὰ τὸ πρὶν τῇ μεταβολῇς δύσεως ἢ ἀνατολῇς ἤλιος ἢ ἡ *F.*
ἄλλων ἄστρων· ὡς ἄρ' οἶδεν ἀνατέλλει νῦν, εἰς τῆτον τότε
τὸ τόπον ἐδύετο, ἀνέτελλε δ' ἐν τῇ ἐναντίᾳ. Τότε γὰρ δὴ
μετέβαλεν ὁ Θεὸς αὐτὸ ὅπῃ τὸ νῦν γήμα. But I am now
about to speak of the Change made in the Rising and
Setting of the Sun and the other Stars; namely, how
they did formerly set in the same Place where they now
rise, and rose where they now set; and how God
chang'd their Course for that which they have at pre-
sent. τὸ γὰρ πᾶν τότε τοτὲ μὲν αὐτὸς ὁ Θεὸς συμποδηγεί *Ib. G. H.*
πορβόμῳν ἢ συσκευλεί· τοτὲ δ' ὠκῆεν, ὅταν αἱ περίοδοι
τῆ προσήκειν αὐτῷ μέτρον εἰλήφασιν ἥδη χεῖρας. Τὸ γὰρ
πάντα

πάλιν αὐτόμαλον, εἰς τὰναντία ἀειάγει). For sometimes God himself directs the Motions of the Universe, and at other times, after so many periodical Revolutions as he sees fitting, he leaves it; whereupon it is, as it were, spontaneously carried about by a Motion contrary

P. 175. C. to the former. Ταύτῳ ἢ μεταβολῇ ἡγεῖσθαι δεῖ τὸ πρὸς τὸ ἔσχατον γιγνομένην τροπῶν πασῶν εἶναι μέγιστην ἐτελειοτάτῳ τροπήν. And this change ought to be accounted the greatest and most entire of any the heavenly Bodies undergo. These Testimonies are so very plain, and full to our present Purpose, that plainer cannot easily be imagined. And by the other *Phænomena* of the original State of the World before the Fall, enumerated by *Plato* in this Place, and to be accounted for in the following Theory, the Time also of this great Change of the heavenly Motions, is determin'd beyond all Contradiction, agreeably to the present *Hypothesis*.

(3.) In the primitive State of Nature there was a perpetual *Equinox*, or Equality of Day and Night through the World. This *Phænomenon*, or such Effects as in part suppose it, is usually by the Christian Fathers apply'd to the Paradisiacal State; and by the ancient Heathens to the golden Age, or the Reign of *Saturn*: (coincident, 'tis probable, at least in part, therewith;) for they all with one Consent deny, that the *Sun's* Course was oblique from one Tropick to another, or that the Difference and Inequality of Seasons, which must have followed therefrom, did belong to that first and most happy State of the World; as may at large be seen in the Places quoted in the Mar-

Burnet,
Theor. l. 2.
c. 1. & 10.
Archæol.
l. 2. c. 5,
& 6.

gin, too long here to transcribe; to which therefore I refer the Reader, and proceed.

(4.) In the primitive State of the World, there was no Equator distinct from the Ecliptick; all Motions were perform'd about one invariable

Axis,

Axis, that of the latter; (for the Planes of the Planets Orbits, I consider as nearly coincident with that of the Ecliptick,) without the Obliquity of one Circle or Motion to another. Tho' this be somewhat related to the former Particular, yet I shall distinctly quote a Testimony or two directly belonging hereto, and not so properly reducible to the other. The first is that of *Anaxagoras*, who says, Τὰ δ' ἄσπερα κατ' ἀρχαίς μὴ δολοειδῶς ἐνεχ-
 θηῶσι, ὥστε καὶ κεντρικῶς τῇ γῆς τὰ αἰὲ φαινόμενον εἶναι πύλον. *Laertius, Lib. II. Scgm. 9.* That the Stars in their primitive State re-
 volv'd in a Tholiform manner, insomuch that the Visible Pole was perpetually at the Vertex of the Earth. Whose Meaning, tho' somewhat obscure, seems to be, That the Motion of the Heavens was originally about one Centre or *Axis*, that of the Ecliptick, whose Pole was continually over-
 against the same Point of the Earth; which on the *Hypothesis* before us is true, but in the present Frame of Nature impossible. The next Author, whom I shall produce, is *Plato*; who, in the foremention'd famous Discourse about the Ancient and Modern States of the World, says, That in the former of them, the Motion of the Heavens was uniform; which thing was the Cause and Original of the golden Age, and of all that Happiness which therein Mankind enjoy'd, or external Nature partook of; which, how well it suits the present *Hypothesis*, I need not say. All that exceeding happy State of Nature, which innocent Man enjoy'd, beyond what he does since the Fall, being therein owing to such a Constitution of the World as this Author intimates, and I am now proving. Which, in the last Place, shall be confirm'd from *Baptista Mantuanus*, who *Archæol. p. 273.*
 says, (relating the Opinion of the old Astronomers,) All the celestial Spheres were in the Be-
 ginning

ginning of the World concentrical and uniform in their Motion; and the *Zodiack* of the *Primum Mobile*, and that of the Planets (the Equator and Ecliptick) were united and coincident, by which means, all sublunary Bodies were more vivid and vigorous at that Time, than in the present Ages of the World; as the *Theorist* sums up the Force of his Testimony, very agreeably to the *Hypothesis* before us, of the Astronomy in the primitive State of the Heavens.

Hypoth. 4.
infra.

(5.) To the first Inhabitants of the Earth, (dwelling near the Interfection of the ancient Ecliptick, with the present *Northern* Tropick; of which hereafter;) the Poles of the World were neither considerably elevated nor depress'd, but near the Horizon. But some Time after the Formation of Things, they suddenly chang'd their Situation; the *Northern* Pole appear'd to be elevated above, and the *Southern* depress'd below the Horizon; and the Course of the Heavens seem'd bent or inclin'd to the *Southern* Parts of the World; or, in plain Words, there was a new diurnal Rotation begun about the present *Axis* of the Earth; which I take to be the true and easy Exposition of the same *Phænomena*. This Matter is much insisted on by the Ancients, and being so, will fully confirm our Assertion, and give Light and Strength to some of the former Testimonies.

De Placitis *Plutarch* has a Chapter entituled, Περὶ Ἐκλίσεως
Philos. 1. 3. τῆς, Of the Inclination of the Earth; in which
c. 12. he thus recites the Opinion of *Leucippus*, Παρεκ-

πεσέν τ' γλῶ εἰς τὰ μεσημβρινὰ μέρη, Ἀλλ' ἥ ἐν τοῖς
μεσημβρινοῖς ἀραιότητα, ὅτε δὴ πεπηγότων τ' βορείων
Ἀλλ' ὅ κατεψύχθαι τοῖς κρυμοῖς, τ' ὃ ἀνιθέτων πεπυ-
ρωμένων. *That the Earth fell, or was inclin'd to-*
wards the Southern Regions, by reason of the Rare-
ness of those Parts; the Northern Regions being
grown

grown rigid and compact, while the Southern were Lib. 9.
scorch'd or on fire. Whose Opinion is also recited Segm. 33.

by *Laertius*, in almost the same Words: Εκλείπειν ἢ ἥλιον ἢ σελήνῳ τῷ κεκλίωθαι ἢ γλῶ πρὸς μεσημβρίαν, τὰ ἢ πρὸς ἄρκτον αἰετὲ νίφεισθαι, ἢ κατὰ ψυχρὰ εἶναι ἢ πύγνυσθαι. *The Sun and Moon were therefore subject to Eclipses, because the Earth was bent or inclin'd towards the South. But the Northern Regions grew rigid and inflexible, by the snowy and cold Weather which ensued thereon.* To the same Purpose is the

Opinion of *Democritus*, recited by *Plutarch* in the same Chapter. Διὰ τὸ ἀσθενέστερον εἶναι τὸ μεσημβρινὸν τῷ περὶ ἐκλίνῃ, αὐτομύην ἢ γλῶ καὶ τῷτο ἐγκλιθέναι· τὰ δὲ βόρεια ἄκρατα, τὰ ἢ μεσημβρινὰ κεκράσθαι, ὅθεν καὶ τῷτο βεβάρησθαι ὅπως περὶ αἰὲς ἐστὶ τοῖς καρποῖς καὶ τῇ αὐξήσει. That by reason of the Southern ambient Air's Imbecillity, or smaller Pressure, the Earth in those Parts increas'd in Bulk, and so sunk and bent that way. For the Northern Regions were ill temper'd, but the Southern very well; whereby the latter becoming fruitful, waxed greater, and, by an Over-weight, preponderated and inclin'd the whole that way. As exprest to the full is the Testimony of *Empedocles*, related by *Plutarch* in that Chapter which is entituled, Τίς ἡ αἰτία τῆς τὸ κόσμον ἐγκλίσεως, or, *Of the Cause of the Inclination of the World*, Τῷ αἰέρον εἰζαντῇ τῇ τῷ ἡλίῳ ὁρμῇ, ἐγκλινθῆναι τὰς ἄρκτους, καὶ τὰ μὲν βόρεια ὑψωθῆναι, τὰ δὲ νότια ταπεινωθῆναι, καθ' ὃ τὸ ὅλον κόσμον. *The North, by reason of the Air's yielding to the Sun's Force, was bent from its former Position; whereupon the Northern Regions were elevated, and the Southern depress'd; as, together with them, was the whole World.* To which agrees *Anaxagoras* in these Words, which immediately follow those that are quoted before, pag. 101. Ὅτερον ἢ πόλον ἢ ἐγκλίσιν λαβεῖν. *But afterward the Pole receiv'd a Turn, or*

Plutarch. de Placit. Philos. l. 2. c. 8.

Inclination. These so many and pregnant Testimonies of Antiquity, as to the Matters of Fact foregoing, (for as to the several Reasons assign'd by them, they being, I suppose, but the single Conjectures of the Authors, must be uncertain, and need not be farther consider'd or insist'd on in the present Case;) seem to me so weighty, that I cannot but build and rely very much upon them. How should such strange and surprizing *Paradoxes* run so universally through the eldest Antiquity, if there were not some Ground or Foundation in earnest for them? 'Twould be hard wholly to reject what were so unanimously vouch'd by the old Sages of Learning and Philosophy, even tho' there were no other Evidence or Reason for our Belief. But when all these Authors, *the only competent Witnesses in the Case*, do but confirm what, on other Accounts, as we have seen, and shall farther see, there is so good Reason to believe; and when so great Light is thereby afforded to the primitive Constitution of Nature, and the sacred History of the State of Innocency; their Attestations are the more credible, and the more valuable, and in the highest degree worthy of our serious Consideration. What I can foresee of Objection, deserving our notice, against what has been advanc'd from the Testimonies of the old Philosophers, is this; that they seem to favour the perpetual *Equinox* before the Flood, by the right Position of the present *Axis* of the Earth, parallel to that of the Ecliptick, (as the *Theorist* imagines) and its Inclination or oblique Position acquir'd at the Deluge, (as the same Author supposes) rather than the original Absence, and subsequent Commencing of the diurnal Rotation after the Fall of Man, as I here apply them. I answer,

(1.) The

(1.) The Parallelism of the *Axis* of a diurnal, to that of an annual Revolution, is, so far as I find, a perfect Stranger to the System of the World; there being, I think, not one of the heavenly Bodies, *Sun* or *Planet*, but has its own *Axis* oblique to the Orbit in which it moves.

(2.) It will be farther evinc'd hereafter, that, *Phenom. de facto*, before the Flood, the *Axis* of the Earth ^{32. *infra*.} was oblique to its annual Orbit, the Plane of the

Ecliptick; and the Year distinguish'd into the present Seasons, *Spring*, *Summer*, *Autumn*, and *Winter*.

(3.) That equable and healthful Temper of the Air, which the *Theorist* chiefly relied upon, as necessary to the Longevity of the Antediluvians, and fully prov'd by Authority, shall be accounted for without such an *Hypothesis*.

(4.) The Testimonies before alledg'd do not, if rightly consider'd, suit this *Hypothesis*; nay, in truth, they fully confute it. Of the five Characters before-mention'd, under which we have reduc'd the main Testimonies, there are two which are common to this, and to the *Theorist's Hypothesis*.

(1.) The perpetual and universal Equinox. (2.) The Coincidence of the Equator and Ecliptick, (tho' in somewhat a different manner) so that the Testimonies for these two can neither establish the one, nor the other, as equally suiting them both. The other three are peculiar to that *Hypothesis* we have been proving, and by consequence at the same Time establish that, and confute the *Theorist's Hypothesis*.

And these three are, (1.) The Equality of a *Day* and a *Year*. (2.) The *Sun* and *Planets* Rising in the *West*, and Setting in the *East*. (3.) The Position of the Poles near the Horizon, with the after Elevation of the *Northern*, the Depression of the *Southern* Pole, and the Inclination or Bending of the heavenly Bodies Courses towards the *South*.

'Tis

'Tis evident at first View, that the two former of these three last mention'd *Phænomena*, are inconsistent with the *Theorist's Hypothesis*, and on a little Consideration 'twill be so of the last also. For while the Poles of the Earth or World remain the same, as depending on the same proper *Axis* of the Earth's own diurnal Revolution, 'tis plain, the Latitude of Places on the Earth, or the Elevation of the Pole equal thereto, remains invariable; and so the Pole which to the Inhabitants of Paradise was elevated at the least 30 Degrees, could not be at the Horizon, whatever right Position the *Axis* of the Earth might have with respect to the Ecliptick. On the same Account there could, even in the *Theorist's* own *Hypothesis*, be no new Elevation of the one, or Depression of the other Pole at the Deluge, nor Inclination of the Courses of the *Sun* and *Planets* towards the *South*. All that could on the *Theorist's* Principles be effected, (besides the Earth's Equator, and Poles pointing to different fix'd Stars, and its Consequences) was only this; that whereas before, the *Sun* was always in the Equator, or middle Distance from any Climate, it afterwards by turns came nearer to them, (as we commonly, tho' carelessly express it) in *Summer*, and went farther from them in *Winter*, than before; which, upon the whole, was no more a Bent or Inclination to one Part of the Heavens than to the other; and so of Planets also. And the Case is the same as to the Poles of the Ecliptick; the *Northern* one being still as much elevated above that of the World at one Hour of the Day, as depress'd beneath it at another. All which is, I think, sufficient to shew, that the Testimonies of Antiquity, alledg'd by the *Theorist* for the perpetual *Equinox*, or the right Position of the Earth's *Axis* till the Deluge, and the oblique Position, and

and different Seasons then acquir'd, are sufficient of themselves alone to confute *his*, and establish the present *Hypothesis*. (5.) All Things consider'd, such a Position as the *Theorist* contends for, was more likely to incommode, than be useful to Mankind. Taking the Matter wholly as the *Theorist* puts it, it would prevent the Peopling of the *Southern Hemisphere*, by the scorching Heat just under the Equator, without the least Intermission at any Time of the Year. It would render the Earth utterly unserviceable, both under the Equator and Poles, and in the Climates adjoining, and so strengthen the Capacity of the Earth in maintaining its numerous Inhabitants; which, were the whole inhabitable, will appear not too large to contain them. It would, by the Perpetuation of one and the same Season continually, hinder the Variety of Fruits and Vegetables of every Country; and many other ways spoil the settled Course of Nature, and be pernicious to Mankind. (6.) No mechanical and rational Cause of the Mutation of the Earth's Axis either has been, or, I believe, can be assign'd on the *Theorist's Hypothesis*, or any others, which should embrace the same Conclusion. (7.) The Testimonies of *Diogenes* and *Anaxagoras*, are as express almost to the Time, as to this Change it self. The Words, being exceeding remarkable, are these, as *Plutarch* himself relates them in that Chapter before quoted, *Of the Cause of the Inclination of the World*; Διαρχόμενος ἡ Ἀναξαγόρας μὴ τὸ συσῆναι τὸν κόσμον ἢ τὰ ζῶα ἐκ τῆς γῆς ἐξαγαγεῖν, ἐκκλίβῃαι πῶς τὸν κόσμον ἐκ τῆς αὐτομάτης εἰς τὸ μεσεμβρινὸν αὐτῆς μέρος ὥς ὑπὸ προνοίας, ἵνα ἂν μὲν τινα ἀοίκητα γένηται, ἂν δὲ οἰκητὰ μέρη τῆς κόσμου, καὶ φύσιν, καὶ ἐκπύρωσιν, καὶ ἐννερασίαν. 'Twas the Doctrine both of *Diogenes* and *Anaxagoras*, That after the Creation or primary Constitution of the World,

and

vid. *Pha-*
nom. 35.
infra.

vid. *Dr.*
Bentley,
Serm. 8.
p. 22, &c.
and *Dr.*
Wood-
ward's
Essay, *p.*
267, &c.

Plutarch.
de Placitis
Philos. 1. 2.
c. 8.

and the Production of Animals out of the Earth, the World, as it were of its own accord, was bent or inclin'd towards the South. And truly 'tis probable, this Inclination was the Effect of Providence, on purpose that some Parts of the World might become habitable, and others uninhabitable, by reason of the Difference of the frigid, torrid, and temperate Climates thereof. Which observable and most valuable Fragment of Antiquity ought to have been before mention'd, but was on purpose reserv'd for this Place; where it not only fully attests the Matter of Fact, the Inclination of the Heavens towards the South; not only assigns the final Cause truly enough, (considering the Uninhabiteness of the torrid, as well as of the frigid Zones, in the Opinion of those Ages) viz. the Distribution of the Earth into certain and fix'd Zones, torrid, temperate, and frigid; but so accurately and nicely specifies the Time also, *That succeeding the Creation*, agreeably to the present Hypothesis; that were I to wish or chuse for a Testimony fully to my Mind, I could scarcely have desir'd or pitch'd upon a better. (6.) Lastly, to name no more, the remarkable Testimonies of *Empedocles* and *Plato*, before quoted; the former for the Length of the primitive Day, and the latter for the Rising of the Sun, Moon and Stars in the West, and their Setting in the East; do both of them determine the Time of these Phænomena to be, *when Mankind sprung out of the Earth*, and, as *Plato* adds, *when Beasts convers'd with Men*: Which we learn from Scripture, was only before the Fall. Which Testimonies being express to the Time of two other Phænomena of the Original State of the World, as the former of *Diogenes* and *Anaxagoras* are to that of the Inclination of the Earth's Axis; do still more compleatly, and

Supra, p.
98, 99,

100.

Plat. Politic.

p. 175. E.

& 176.

A, B.

Gen. ii. 7.

& iii. 1,

2, &c.

and even unanswerably prove, that the Time of these great Mutations is rightly assigned in the present *Theory*.

II. I come now, in the second Place, to shew, That the present *Pbænomena* of the *Earth* do prove, that its diurnal Motion did not commence till some Time after its annual, and by consequence, in all Probability, not till after the Fall of Man. And an egregious Confirmation of this Assertion we meet with in the *Philosophical Transactions*, Numb. 195. and it is the celebrated Dr. *Halley's Theory of the Variation of the Magnetick Needle*; as corrected by my own Observations and Discoveries since, to be found in my *Discovery of the Longitude and Latitude by the Dipping-Needle*. Dr. *Halley*, therefore, from very many Observations, taken by several Persons, in distant Places, and at various Times, has discover'd at least two Magnetical Poles, the one *Northern*, and the other *Southern*; from which arises all the Declination of the Horizontal and Inclination of the *Dipping-Needle*, according to the Difference of Place. Which Poles being moveable, thence arise these Variations of Magnetick Needles, according to the Difference of Time. Now to account for these moveable Magnetical Poles, there must be a very great moving spherical Body within the Earth, and extending its Effects from Pole to Pole: The Centre of this great moving Body, the Doctor rightly proves to be the same with the Centre of the Earth; because otherwise its Motion would change the Centre of Gravity in the Earth, the Equilibration of its Parts, and the *Axis* of the diurnal Rotation; and would withal alter the Surface of the Sea. This moving internal Substance must also be loose from the external Parts of the Earth;

so

so that the external Parts may be reckon'd as a Shell, and the internal as a *Nucleus*, with a fluid Medium between. The internal *Nucleus* must be a Magnet, having its Poles in two Places distant from the Earth's *Axis*; which latter Poles do slowly change their Place in respect of the external Earth: This Motion is *Westward*, and by consequence, the *Nucleus* has not attain'd the same Degree of Velocity with the exterior Parts in their diurnal Revolution; but so very nearly equals it, that in 365 Revolves, the Difference is scarce sensible. So that this *Nucleus* is many Hundreds of Years in revolving round the Earth *Westwards*, to the same Point it had set out before: The Reason why the internal *Nucleus* has not that Degree of Velocity which the exterior Shell has, Dr. *Halley* agrees must arise from the Impulse whereby the diurnal Motion was impress'd upon the Earth; which being given to the external Parts, is thence communicated to the internal, but not so perfectly as to equal the first Motion impress'd on, and still conserv'd by the superficial Parts of the Globe. Thus far Dr. *Halley* agrees with me. So that here we see, That when one of the most sagacious Naturalists that ever was, reasons from plain Matter of Fact, or the known Observations of the Variation of the Declination of the Magnetick Needle, he is oblig'd to make exactly such Deductions as from quite other Principles and Reasonings I saw Ground to suppose; and at once confirms many of the principal and most paradoxical Parts of this Theory; and especially that Proposition I am now upon, namely, That the Earth's diurnal Motion did not commence till some Time after its annual, *i. e.* till after it was entirely form'd and consolidated together; and by consequence, in all

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Probability, not till after the Fall of Man. In the next Place, therefore,

III. I shall assign the probable mechanical Cause of this Commencement of the Earth's diurnal Motion, after its annual had continued some Time, and shew that that Cause is agreeable to the present *Phænomena* of Nature and of the Earth. Now the only assignable Cause, is that of the Impulse of a Comet with little or no Atmosphere, or of a central Solid hitting obliquely upon the Earth along some Parts of its present Equator. From which Impulse, both the annual Orbit of the Earth, as we shall observe presently, would be alter'd; and a vertiginous Motion about a new and real *Axis*, would certainly commence. And this I suppose was the true mechanical Original of the Earth's diurnal Motion, and no other. And that this Cause is agreeable to the *Phænomena* of Nature, is plain; because such a Motion and Impulse of a Comet is as possible as any other whatsoever, from the now known *Phænomena* of their Motions; and because the exceeding Brightness of many Comet's Heads, in *Hevelius* and others, makes it very probable, that some Comets have very little Atmosphere, and others perhaps none at all. And then this Cause is not only agreeable to, but almost demonstrated by the *Phænomena* of our present Earth: For, as we have just now seen, Dr. *Halley* and my self do find, from the *Phænomena* of the Variation and Inclination of Needles, that the external Parts of the Earth receiv'd the original Impulse which caus'd the diurnal Motion; that it was from them convey'd to the internal Parts, and this so plainly, that those internal Parts have not yet in 6200 Years Time receiv'd the entire Impression, but move round somewhat more slowly to this very Day. Which

is not only a sufficient, but a very surprizing Account of this Matter; only it must here be observ'd, that in Probability, the Comet which caused the diurnal Revolution, was of the Bigness rather of one of the small Secondary, than of the large primary Planets; for otherwise, by its causing vast Tides in the Abyss, after it was pass'd by, it would have occasion'd many more Alterations in the Earth, than we have any reason to believe happen'd at that Time.

To these three grand Arguments for the Proof of my main Conclusion, I shall, by way of super-numerary ones, or Appendages, add one or two more, and so leave the whole to the Consideration of the impartial Reader.

(4.) The State of Mankind, without question, and perhaps that of other Animals, was before the Fall vastly different from the present; and consequently requir'd a proportionably different State of external Nature; of which, without the *Hypothesis* before us, no Account can be given, or at least has not yet by any been attempted. The World, as to other things, seems to have been at first, in great measure, put into the same Condition which we still enjoy; and yet Reason, as well as Scripture, assure us, that so different a Condition of Things in the Animal, Rational and Moral, must have been suited with an agreeably different one in the Natural and Corporeal World. Which being consider'd, and that at the same Time no remarkable Difference has been, or perhaps can be assign'd, but what the Hypothesis before us, and its Consequences afford us; and that withal a satisfactory Account of the several Particulars is deducible from the same, as I hope to make appear hereafter; upon the whole, I think this a very considerable

derable Attestation to what has been before insisted on.

(5.) Lastly, The present *Hypothesis* gives an easy Account of the Change in the Natural, on the Change in the Moral World; and of the sad Effects of the Divine Malediction upon the Earth after the Fall of Man; which till now has not, that I know of, been so much as attempted by any. Several have been endeavouring to account for that Change which the Deluge made in the World: But they are silent as to the natural Causes or Occasions of a Change, which (Antiquity, sacred or prophane, being judge) was in all respects still more remarkable: The State of Innocency, and that of Sin, being sure on all Accounts more different from, and contradictory to each other, than the Antediluvian and Postdiluvian, either in Reason can be suppos'd, or in Fact be prov'd to be. Now as to the Particulars of this Change, and the Causes of them; and how well, on the *Hypothesis* we are upon, they correspond to one another, I must leave that to the Judgment of the Reader, when I come to treat of them in their own Place hereafter. In the mean time, this may fairly be said, That *This* being the *first* Attempt at an *Entire Theory*, or such an one as takes in *All* the great Mutations of the Earth; as it will on that Account claim the Candor of the Reader, and his unbiass'd Resolution of embracing the Truth (however new or unusual the Assertions may seem) when sufficiently evidenc'd to him; so the Coincidence of Things from first to last, thro' so many Stages and Periods of Nature, and the Solution of all the main *Phænomena* of every such different Stage and Period, from the Creation to the Consummation of all Things, if they be found just,

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mechanical, and natural, will it self deserve to be esteem'd one of the most convincing and satisfactory Arguments for any single Particular of this Theory that were to be desir'd; and shew, that not any great Labour or Study of the Author, but the happy Advantage of falling into true and real Causes and Principles, is, under the Divine Providence, to be own'd the Occasion of the Discoveries therein contain'd. In all which, may these my poor Endeavours prove as satisfactory to the Minds of others, as they have been to my own, and give them the same Assurance of the Verity and divine Authority of those holy Books, where the several Periods are recorded, and the *Phænomena* chiefly preserv'd, which the Discovery of these Things has afforded my self, and I am sure that my Labours will not be in vain.

Scholium. It will be fit here to state my *Hypothesis*, or Opinion about the Circumstances of the Earth's annual Motion before the Commencement of its diurnal, more particularly; that so the Reader may not only observe, that the one was *prior* to the other in general, but how and in what manner that Motion was perform'd in the Primitive or Paridisiacal State of Mankind. Notwithstanding therefore, I shall hereafter assert, and attempt to prove, that the *Original Orbits* of the Planets, and particularly the Earth, were *perfect Circles*; meaning by the *Original Orbits*, those in which they were to revolve immediately after they were not only entirely form'd, but were also to be universally inhabited; yet I must here add, that I suppose that this Reduction of the very oblong eccentrical Orbit of our Earth at least, if not of the other Planets, whilst it was a Comet, into an uniform concentrical and circular one, which

which I suppose it had before the Deluge, was gradual, and not done all at once; the greatest Part at the commencing of the *Mosaick* Creation; and the rest at the commencing of the diurnal Rotation afterwards. Nay, indeed, this is almost of Necessity to be suppos'd; because the diurnal Rotation could not mechanically, or without a Miracle, begin, but by the oblique Collision of a Comet, which we have already suppos'd the Cause of it; and this Collision must necessarily affect the annual Motion, and alter the *Species* of its *Ellipsis* also: Which being suppos'd, and that withal, Providence adjusted all Circumstances, so as should be most for the Advantage of the Regions adjoining to *Paradise*, where alone *Adam* and the other Creatures dwelt in this State, as is most reasonable to do; we shall then have our Earth revolving in a moderately eccentric *Ellipsis*, without any diurnal Rotation, about the Sun in the Space of a Year; the exact Length whereof will not now be determinable; a Day and a Year will be all one: We shall have some Diameter of the Earth, which pass'd near *Paradise* parallel to the longer *Axis* of that *Ellipsis* it revolv'd in: And withal we shall have the Place of *Paradise*, respecting nearly the same fix'd Stars with the *Perihelion* of the *Ellipsis*. Which being suppos'd, we may observe, that as a circular Orbit is much the best for a Globe inhabited *all round*, That providing equally for the Convenience of both Hemispheres; so is this Elliptick Orbit the best for a Globe inhabited but in *one Place*, as the Earth was in its primitive State; This providing peculiarly for the Happiness of that particular Spot, where alone the living Part of the Creation was to reside; as on a little Consideration will easily appear. Thus, for instance,

the Heat of the Day-time would gradually increase *before*, and decrease *after* Noon; but yet would never be violent; because a great Part of the Increase of the Heat by the Sun's rising above the Horizon, still higher and higher in the Forenoon or Spring, would be prevented by the Earth's real receding from him, and approaching nearer his *Apbelion* during the same Time: And *vice versâ* in the Afternoon, or Summer; which would render the State of the Air more equal and uniform, and less uneasy or inconvenient than any other Method whatsoever. Thus also not only the Cold of the Night, (which by our Nearness to the Sun, would be inconsiderable) but the too long Duration and Darkeness thereof would be entirely avoided. For the whole Night would then bear no more Proportion to the entire Νυχθήμερον , than in the *Ellipsis* the *Area p B q*, below the *Latus Rectum*, bears to the whole *Area H B G F*; suppose the Proportion of 1 to 6, which will amount to no more than two Months: Out of which Night-time we must deduct the two *Crepuscula*, each of near a Fortnight, which now reduces the Duration and Darkeness of the Night it self, to about a single Month; out of which also another Fortnight is to be still deducted for the Time of the Moon's being above the Horizon, and enlightening the Earth: So that at last if the Moon's *Crepuscula* be at all allow'd for, as they ought to be, we shall scarce have a single Week of pure Darkeness in the whole Year; to the great Comfort, Advantage, and Benefit of this truly Paradisiacal State. But if it be objected, that this implies, that only some Parts of the Earth were habitable with any Convenience before the Fall, *viz.* those about Paradise; or, however, not more than that Hemisphere: I reply, That this Objection

seems

Fig. 3.

seems to me hardly enough considerable to deserve an Answer. I should think it no great Matter, if all the Earth, excepting the Regions about Paradise, were *uninhabitable* at a Time when they were *not to be inhabited*. For to what Purpose is it, that all proper Provision be made for the Entertainment of a Company of Guests at a Table, when 'tis certainly known that *not one of those* Guests will be there. Providence does ever wonderfully provide for the Accommodation of his Creatures, where-ever it places them: But that a suitable Provision is made for them where they will *never* be plac'd, I see no Reason to imagine. But if it be still farther objected, that in this *Hypothesis*, the Heat of the Sun before the Fall would at last be intolerable, nay several hundred times as great as with us at present, because of the Continuance of his Stay above the Horizon for so many Months together. I answer, that this is all plainly a Mistake: The Heat produc'd by the Fire, or the Sun, for some Time considerably increases; but this only for a while, till a suitable or competent Degree of Heat, correspondent to the Sun or the Fire's Power at that Distance be produc'd, but no longer. Let us try this a little by Calculation in Dr. Keill's way, who made the Objection. A Piece of Wax will melt in a Second of Time, suppose, at the Distance of an Inch from a very hot Fire; because the Degree of Heat there is sufficient to dissolve its Texture immediately. Let us then remove it to the Distance of 100 Inches, where the Heat is 10,000 times weaker, for the Space of 10,000 Seconds, or near 3 Hours Space. The Quantity of Heat therefore in Dr. Keill's way must be equal to the Rectangle contain'd, betwixt the Sine of the Angle of Incidence (which we suppose the same in both Cases) and the Time

of Continuance; or exactly equal to the former Heat; and must therefore have the same Effect in 3 Hours Time that the other Heat had in one Second, and melt the Wax as the other did. Which yet I presume Dr. *Keill* did not believe it would. Thus let us compare the Intensity of the Heat of the Sun at the Equator and near the Poles, where the Sines of the Sun's Angle of Incidence [for the Day-time or 12 Hours at the Equator, and for the 12 Hours at the Conclusion of the half-year's Day near the Poles] are as 10 to 1; which, according to Dr. *Keill*, will be as 10×12 to 1×4320 , or as 1 to 36; And so the Heat near the Pole be 36 times as intense as that at the Equator; which I presume Experience does not attest. But after all, this Objection, if it were true, chiefly relates to a circular Orbit of the Earth before the Fall; but in the present Elliptick *Hypothesis* is very little to the Purpose.

IV. The Ancient Paradise or Garden of *Eden*, the Seat of our first Parents in the State of Innocence, was about the *North-West* Bounds of *Affyria*, at the River *Tigris* and *Euphrates*: (for their *Antediluvian* Streams seem to have been united before they were come so far as *Affyria*;) a little below which Place they were parted into four Branches, and so ran into the great *Southern* Ocean, call'd by the Ancients the *Red-Sea*, at four Out-lets at no small Distance from one another.

That somewhere thereabouts, on the *Northern* Regions

Regions of *Mesopotamia* was the Place of the ancient Paradise, seems very probable from two of its Rivers, *Tigris* and *Euphrates*, occurring in the Description of its Situation by *Moses*; from the neighbouring Counties to *Eden* mention'd in Scripture; and from the Countries which were water'd or encompass'd by those four Streams, *Pi-son*, *Gibon*, *Tigris*, and *Euphrates*, which arose from the grand River of Paradise, soon after it had water'd the same. And when the following Theory is understood, which will shew that all our present upper Earth is factitious, and the Sediment of the Deluge; and that, by consequence, the Rise and Currents of Rivers are not always the same now as before the Flood, the Strangeness and Novelty of this Assertion will not appear so great an Argument against it, as at first it must necessarily do. I confess, the Situation of Paradise has been a very obscure Problem; because we still examine the Description of it by the *post-diluvian* Geography, and the *present* Course of Rivers there. But if we would lay aside that Mistake, I think *Moses's* Account fixes the Garden of *Eden* at the Place here assign'd by us, and no other. Let us trace all the Description.

And the Lord God planted a garden eastward in Eden. *Eden*, by the Situation of the Places mention'd with it in Scripture, and on Account of the City *Adana* upon the River *Euphrates*, seems to be partly in *Syria* and partly in *Mesopotamia*; where by the Garden in the *East* Part of *Eden*, will be situate about the *North-West* Bounds of *Assyria*, according to this *Hypothesis*. And a river went out of *Eden*, to water the garden: That is, it ran partly *Eastward*, since the Garden was planted in the *East* Part of *Eden*, as we have seen. And hence it appears, that originally *Tigris* and *Euphrates*,

Isaiah
xxxvii.
12, 13.
Ezekiel
xxvi. 22,

Gen. ii.
8, &c.
Steph. Byzant. in
"Adana.

pbrates, if then they were two Rivers, were united together before they came so far *South* as *Mesopotamia*; and the united Stream directed its Course *Eastward* through the *Northern Part* of *Mesopotamia*, between the present Channels of *Euphrates* and *Tigris* there, and so went out of *Eden* to water the garden. And from thence it was parted, and became into four Heads, or Beginnings of different Streams. The name of the first was *Pison*,

* *Xenophon* which is still preserv'd in that of * *Phyfcus*, a River running into *Tigris*; that was it which com-
de Expedit. *Cyri*, l. 2. passed the whole land of *Havilah*, or ran South-
Westward, near *Syria* and *Canaan*, and after it

† *Vid. Joh.* had compass'd the Countrey belonging to † *Ha-*
Clerici *vilah*, in the *South-West* of *Arabia deserta*, ran in-
Comment. to the *Arabian Gulph*, and so into the ancient
in Gen. *Red Sea*. The name of the second river was *Gibon*,
 ii. 11.

‡ *Herodot.* which is still preserv'd in that of ‡ *Gyndes*, a Ri-
 I. 189. ver also running into *Tigris*, that was it which
 compass'd the whole land of *Cush*, or ran also South-
ward, inclining to the *West*, and after it had

|| *Bochart.* compass'd the whole Land of *Cush*, || in the *North-*
Phaleg. *West* of *Arabia Felix* and *South-West* of *Arabia*
 l. 4. c. 2. *Petrea*, ran into the same *Gulph* and *Sea* with

the former. The name of the third river was *Hidde-*
kel, or *Tigris*, whose Name is preserv'd in that
 famous River which still separates *Assyria* from
Mesopotamia; that was it which went toward the
East of Assyria, and therefore was the most *Eastern*
 Branch, which ran *Eastward* till it was past *As-*
syria, and then turn'd to the *South*, and wash'd
 that Countrey on its *Eastern Borders*, as it does
 now on its *Western*, and so passing on, enter'd the
 great Ocean or *Red Sea*, by the *Persian Gulph*:
 As did also the *fourth* or principal Branch, which
 ran nearest to the present Course of the most fa-
 mous of the Rivers of those Countries, *Euphra-*
tes,

tes, and which therefore has its ancient Name preserv'd therein to this Day.

This Account we see takes in all the Description of *Moses*, excepting that which belongs to the Metals and Minerals of some of those Antediluvian Countries. But since the Sediment of the Waters of the Deluge has cover'd those Countries and Mines so deep, as to take away generally the Expectation of our obtaining or examining those Metals and Minerals, as will hereafter appear, I shall not insist any farther on that Matter; but conclude that our present *Hypothesis* agreeing with all the Characters in *Moses* that are capable of being examin'd, and no other *Hypothesis*, I think, doing so, seems to afford good Foundation for our Belief that we have not much err'd in our Opinion; but that the Garden of *Eden* was situate about the *North-West* Bounds of *Assyria*, at the River *Tigris* and *Euphrates*.

V. The Primitive Ecliptick, or its correspondent Circle on the Earth, intersected the present Tropick of *Cancer*, if not at Paradise, yet at least at its Meridian.

Since from the last *Hypothesis* but one, it appears that the Primitive Ecliptick was a fix'd Circle on the Earth, as well as in the Heavens; and must both equally divide the present Equator, and touch the present Tropicks; 'tis proper to fix, if possible, the Point of Intersection with the *Northern* Tropick; whereby the entire Circle may still be describ'd, and its original Situation determined. Which is the Attempt of this *Hypothesis* we are now upon; and which I thus prove,

(1.) The

(1.) The Production of Animals out of the Earth and Waters, at or near Paradise, seems to have requir'd all the Heat possible in any Part of the Earth; which being to be found only near the ancient Ecliptick, confirms the last mention'd Argument, and pleads for that Situation of Paradise which is here assign'd to it.

(2.) And principally, This Situation is determin'd by the Coincidence of the Autumnal Equinox, and the Beginning of the Night or Sun-set, at the Meridian of Paradise. 'Tis known that at Paradise, or the Place of the Creation of Man, Gen. i. 5, the *Νυχθήμερον*, or Natural Day, commenc'd with 8, 13. 19, the Sun-setting, Six a Clock, or coming on of 23, 31. the Night. 'Tis granted also, that the Beginning of the most ancient Year, (which shall presently be prov'd to have been at the Autumnal Equinox) was coincident with the Beginning of the World, or of the *Mosaick* Creation. Which Things compar'd together, do determine the Question we are upon. It being impossible, on the Grounds here suppos'd, that Sun-set and the Autumnal Equinox should be coincident to any but those in the *Northern* Hemisphere, at the Point of Interfection of the ancient Ecliptick, and the present Tropick of *Cancer*; or such as were under the same Meridian with them; as any ordinary Astronomer will soon confess: Which Argument is decretory, and fixes the Place of Paradise to the greatest Exactness and Satisfaction.

Corollary 1. Hence a plain Reason is given, why the Days of Creation commenced at Evening; which otherwise is a little strange; It being but a necessary Result of the Time of the Year, and Region of the Earth, when, and where the Creation began.

Coroll.

Coroll. 2. *As also why the Jewish Days, especially their Sabbath-Days, began at the same Time ever since: The Memory of the Days of Creation being* Lev. xxiii. 32. *thereby exactly preserv'd.*

Coroll. 3. *As also why their Civil Years, but especially their Sabbatical Years, and Years of Jubilee, (even after their Months were reckon'd from the Vernal) begun at the Autumnal Equinox: The Memory of the Years of the Creation being thereby alike exactly preserv'd also.*

VI. The Patriarchal, or most ancient Antediluvian Year, mention'd in the Scripture, *began at the Autumnal Equinox.* Vid. Calvis. Prolegom. de tempore mundi conditi, c. 34.

The Reasons of this Assertion are these ensuing.

(1.) The principal Head or Beginning of the *Jewish Year* in all Ages, was the first Day of their Autumnal Month *Tisri*; and was accordingly honour'd with an extraordinary Festival, the Feast of Trumpets: While the Head or Beginning of their sacred Year, the first of *Nisan*, had no such Solemnity annex'd to it: As is known and confess'd by all. Lev. xxiii. 24, 25. Numb. xxix. 1--6.

(2.) When God commanded the *Jews*, on their coming out of *Egypt*, to esteem the Month *Nisan*, the First in their Year; it seems plainly to imply, that till then it had not been so esteem'd by them. The Words are these; *The Lord spake unto Moses and Aaron in the land of Egypt, saying,* Exod. xii. 1, 2. *This Month (shall be) unto you the beginning of Months; it (shall be) the first Month of the Year to you. And this is strengthen'd by considering, that tho' we here find an Original of the sacred Year*

Year in the Spring; yet we no where do of the civil in Autumn: Which therefore, 'tis very probable, was the immemorial Beginning of the ancient Year long before the Times of *Moses*.

(3.) Whatever Beginning of the *Jewish* Year there might be on other Accounts; 'tis confess'd by all, That the Beginning of the Sabbatical Years, and Years of Jubilee, (by which, in all Probability, the primary Years of the World were commemorated and preserv'd,) was at the Autumnal Equinox: Which is a very good Argument that those ancient Years, so commemorated and preserv'd, began at the same Time also.

Lev. xxv.
8, 9, 10.

Exod.
xxii. 16. &
xxxiv. 22.

(4.) The Feast of Ingathering, or of Tabernacles, which was soon after the Autumnal Equinox, is said to be *in the End*, or *after the Revolution of the Year*: Which is no small Confirmation of the Assertion we are now upon.

(5.) What was alledg'd under the last Proposition, is here to be consider'd; That on this *Hypothesis*, a clear Reason is given of the Night's preceding the Day in the History of the Creation, and ever since among the *Jews*; which otherwise is not so easily to be accounted for.

(6.) The Testimony of the *Chaldee* Paraphrast, (to which *Josephus* does fully agree) is as express as possible, upon 1 *Kings* viii. 2. where the Words are, *In the Month Ethanim, which is the seventh Month*; (*viz.* as all confess, from the Vernal Equinox) upon which the Paraphrase is, *They call'd it of Old the First Month; but now it is the Seventh Month*: Which may well counterpoise all that from some later Authors can be produc'd to the contrary.

Plut. de Isi-
de & Osiri-
de, p. 356.
D.

(7.) This is also confirm'd by the remarkable Testimony of *Plutarch*; who, speaking of the Day

Day of *Ofiris* or *Noah's* going into the Ark, says expressly that it was the 17th Day of the Month *Atbyr*; in which the Sun passes through *Scorpius*; and this Time *Moses* as expressly calls the 17th Day of the second Month; therefore the first Month began when the Sun enter'd into *Libra*, or at the Autumnal Equinox. So that upon the whole, I may fairly conclude, notwithstanding some small Objections, (which either lose their Force on such Principles as are here laid down, or will, on other Occasions, be taken off,) that the most Ancient or Patriarchal Year began at the Autumnal Equinox.

VII. The Original Orbits of the Planets, and particularly of the Earth, before the Deluge, were perfect Circles.

This is in it self so easy and natural an *Hypothesis*, that I might very justly take it for granted, and make it a *Postulatum*: And in Case I could prove every Thing to agree to, and receive Light from the same; and withal account for the present Eccentricity, no Man could fairly charge it with being a precarious or unreasonable one. But altho' the main Reasons for such a Proposition are, I confess, to be taken from the Consequences thence to be deriv'd; and the admirable Correspondence of them all to ancient Tradition, to the *Phænomena* of the Deluge, and to the Scripture Accounts relating thereto, as will be visible hereafter; yet there being some Arguments of a different Nature which may render it probable, and prepare the Reader for admitting the same, before the Consequences thereof come to be fully understood, I chuse to place this Assertion here,

among

among my *Hypotheses*; tho' I do not pretend that the Arguments *here* to be made use of, ought to put the same so near to Certainty, as its Fellows have, I think, Reason to expect with unprejudic'd Readers. But to come to the Matter it self: The Reasons I would offer, are these following.

(1.) The Designs and Uses of Planets seem most properly to require circular Orbits. Now in order to give a rational Guess at the same Designs and Uses of Planets, I know no other way than that from a Comparison with the Earth. And here, since we find one of the Planets, and that plac'd in the Middle among the rest, to agree with the others in every thing of which we have any Means of Enquiry; 'tis but reasonable to suppose, that it does so also in those, which 'tis impossible for us, by any other certain way, to be assured of. If we observe a certain Engine in one Country, and see to what Use 'tis put, and to what End it serves; and if afterward we see another, tho' in a different Country, agreeing to the former in all things, as far as we are able to discover: tho' we are not informed of its Design and Use, we yet very naturally, and very probably, believe that it serves to the same Purpose, and was intended for the same End with the former. Thus it ought sure to be in the Case before us; and by the same way of reasoning, we may fairly conclude to what Uses all the Planets serve, and on what general Designs Providence makes use of them, *viz.* to be the Seats or Habitations of Animals, and the Seminaries of such Plants and Vegetables as are necessary or convenient for their Support and Sustenance. Which being therefore probably suppos'd of the rest, and certainly known of the Earth, I argue, That a circular Orbit, being the most fit and proper for such Purposes,
may

may justly be presum'd the original Situation of the Planets, and the primary Work of Providence in ordering their Courses. Such Creatures, rational, sensitive, or vegetative, as are fit and dispos'd for a certain Degree of the Sun's Heat, are very much incommoded by one much greater, or much less; and by consequence are peculiarly accommodate to a Circular, but by no means to an Eccentric Orbit. And tho' the Inequality of the Earth's Distance from the Sun, in the different Points of its Orbit, be so inconsiderable, that we observe little Effect of it; yet in some of the other Orbits, which are much more Eccentric, it must be very sensible, and have a mighty Influence on the Productions of Nature, and the Constitution of Animals in Planets revolving therein. And what Reason can we imagine, why the *Southern* Hemisphere, for instance, of a Planet, by the Situation of the *Perihelion* near its Summer Solstice, should be so different from the *Northern*, in the primary Contrivance of the Divine Providence? This seems not so agreeable to the original Regularity and Uniformity of Nature; nor does it look like the immediate Effect of the Divine Power and Wisdom in the first Frame of the World, when all Things just coming out of the Creator's Hands, must be allow'd to have been perfect in their Kind, and exceeding good; when Creatures rational and irrational, of the same Species, Abilities, Faculties and Demerits, were in common to live upon the several Parts and Regions of it: and the natural State of Things was to be equally suited to them all, and dispos'd impartially among them.

Vid.

Arg. 4.

Conseq. 2.

Hypoth. xi.
infra.

(2.) The opposite Position and Use of the opposite Species of Bodies in the Comets, seem, by the Rule of Contraries, to suppose what we have been
 I
 contending

contending for. If indeed we had found a Mixture of Planets and Comets in the same Regions of the Solar System, and a Confusion of the Orbits and Order of both: If we had discover'd all Species of *Ellipses*, with all Degrees of Eccentricity from the Circle to the *Parabola*; the Proposition I am upon would be more than precarious, and but too disagreeable to the Frame of Nature. But since we find no such thing, but the clean contrary; namely, that all the Comets revolve in Orbits so extreamly eccentrical, that such Segments of them as come within our Observation are almost *parabolical*, or of an infinite Degree of Eccentricity; 'tis not unreasonable to conclude, that, likely enough, the contradistinct Species of Bodies, the Planets, originally revolv'd in Orbits of no degree of Eccentricity; that is, in perfect Circles: The Eccentric or *Elliptick* Orbits of the one, among other things probably distinguishing them from the other; which originally moved in Concentrical or Circular ones.

(3.) This *Hypothesis* is favour'd by the ancient Astronomy; which so pertinaciously adher'd to the Circular *Hypothesis*, notwithstanding all its Eccentricks, Epicycles, and strange Wheelwork; that it may seem the Effect of ancient Tradition, that once the heavenly Motions were really Circular. And this is the more remarkable, because, not only the true System of the World, but the *Conick Sections*, and among them the *Elliptick* Figure was very anciently known and consider'd. By the Introduction of which, all the fanciful and uncouth Figments they were forc'd upon, might have been wholly spar'd, and an easy and natural *Idea* of the Planetary Motions obtain'd. Which, if ever it had been started, by its exact Agreement to the *Phænomena*,
could

could scarce ever have been lost; and which yet, as far as I know, never came into the Minds of Astronomers till the great *Kepler's* Time; who first prov'd the Orbits to be *Elliptick*, too plainly to be denied, or almost doubted any longer.

(4.) The Quantity of the several Orbits *Eccentricity*, and the Position of their *Aphelia*, are so various, different, and without any visible Design, Order or Method, so far as is hitherto discover'd, that the whole looks more like the Result of Second Causes, in succeeding Times, than the primary Contrivance and Workmanship of the Creator himself. 'Tis indeed possible that there *may* be Design and Contrivance in these Things, tho' we cannot discern them; yet seeing we have, on the common Grounds, no Reason to affirm such a Thing; seeing the equidistant Situation from the Sun would more clearly shew such Design and Contrivance; seeing also, the original circular Motion of the Earth once granted, the Position of the Earth's *Aphelion*, and the Quantity of its Orbit's *Eccentricity*, do so remarkably infer the Divine Wisdom and Artifice therein, and are wonderfully subservient to the highest Purposes; (by the one, the Day of the Year when the Flood began; by the other, the Length of the Antediluvian Year, being nearly determinable; of which hereafter;) 'tis, I think, but fair Reasoning to conclude, That that *Hypothesis*, which does so certainly argue Art and Contrivance, Order and Providence, is to be preferr'd to another, which seems to infer the clean contrary, or at best only leaves Room for a Possibility thereof; as 'tis in the present Case. I do by no means question, but these uncertain *Eccentricities* and various Position of the *Aphelia* of the Planets, with all other such seemingly anomalous *Phænomena* of Nature, hap-

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pen'd by a particular Providence, and were all (one way or other) fitted to the State of each Species of Creatures inhabiting the several Planets, according as their respective Behaviours or Circumstances, in their several Generations, requir'd; (of which the succeeding Theory will be a pregnant Instance :) But my Meaning is this; that when every Thing was just as the Wisdom of God was pleas'd to appoint; when each Creature was compleat and perfect in its Kind, and so suited to the most compleat and perfect State of external Nature; 'tis highly probable that the outward World, or every such State of external Nature, was even, uniform, and regular, and agreeable to the Necessities of the whole Body of those Creatures that were to be plac'd therein; and as properly suited to all their several Conveniencies, as was possible, or reasonable to be expected. Such a State, 'tis natural to believe, obtain'd through the Universe, till succeeding Changes in the Living and Rational, requir'd proportionable ones in the Inanimate and Corporeal World. 'Tis most philosophical, as well as most pious, to ascribe only what appears wise, regular, uniform, and harmonious, to the First Cause; (as the main *Phænomena* of the heavenly Bodies, their Places and Motions, do, to the greatest degree of Wonder and Surprise;) but as to such Things as may seem of another Nature, to attribute them entirely to subsequent Changes, which the mutual Actions of Bodies one upon another, fore-ordain'd and adjusted by the Divine Providence, in various Periods, agreeably to the various Exigencies of Creatures, might bring to pass.

(3.) It being evident, that Multitudes of Comets have pass'd through the Planetary System; that

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that in such their Passage they were sometimes capable of causing; nay, in very long Periods must certainly, without a Miracle, have caused great Alterations in the same; and that the Nature and Quantities of the present *Eccentricities* or Anomalies, are no other than what must be expected from such Causes; 'tis very reasonable to allow these Effects to have really happen'd; and that consequently all might be, as I here contend it was originally, orderly, and regular; and particularly the Planetary Orbits uniform, concentric and circular, as I am here concern'd to prove. If any one of us should observe that a curious Clock, made and kept in Order by an excellent Artift, was very notably different from the true Time of the Day, and took notice withal of a certain Rub or Stoppage, which was very capable of causing that Error in its Motion; he would easily and undoubtedly conclude, that such an Error was truly occasion'd by that visible Impediment; and never designed at first, or procur'd by the Artift. The Application of which Resemblance is too obvious to need a Comment, and naturally enforces what I am now contending for.

(6.) 'Tis evident, that all the little Planets about *Jupiter* move in Orbits truly circular, without any considerable degree of Eccentricity: On which account, the present *Hypothesis* appears to be far from contrary to the Frame of Nature; nay, to be no other with regard to the *Primary*, than is, *de facto*, true in this *Secondary* System; and from that so remarkable a Parallel, may the more easily be believ'd to have once been the Case of this also.

(7.) 'Tis evident, that in case the Comets Attraction were the Cause of the Eccentricity

of the Planets, they would usually draw them also from the Plains of their former Orbits, and make them inclin'd or oblique to one another: So that where the Orbits are Eccentric, 'tis probable, according to the present *Hypothesis*, the Plains must be different, and oblique to each other; and where the Orbits are circular, the Plains of the several Orbits must be as they were at first, or, in Probability, coincident. Now this is really observable in the two Systems last mention'd: The Plains of the circular Orbits about *Jupiter* being nearly, if not exactly coincident, and those of the Eccentric ones about the Sun being oblique to each other. Which Observation is no inconsiderable Argument, that originally the Planetary Orbits were exactly circular; as well as that at the same time they were every one in the same common Plain, or in Plains coincident with one another. Which last mention'd *Hypothesis*, (to speak a word or two of that by the way) tho' I look upon it as not unlikely, and such an one as several of the foregoing Arguments might be apply'd to, and do plead for; yet I shall not insist farther upon it here; both because the following Theory does not directly depend upon it in any Part; and because the moving in different Plains does not cause any ill Effects, or notable Inconveniencies, in the System of Nature, as we have shewn the Eccentricity does; and so cannot with the same Clearness and Force be urg'd against its being the original Workmanship of God, as I have above discours'd in the other Case. Only this I may say, that seeing the Planetary Orbits are still almost in the same Plain; seeing the Comets Passages are capable of causing such little Obliquity; may, were they originally in the same Plain, in

Length

Length of Time, by the foremention'd Attraction, they must, without a Miracle, have been drawn from their common Planes, and been oblig'd to revolve in those different from each other, as they now do; and seeing withal that *Eccentricity* and *Obliquity*, as *Uniformity of Distance from the Centre*, and *Coincidence of the Planes*, go together in the World, as has been just before noted; this *Hypothesis* of the original Coincidence of the Planetary Planes, is an Opinion neither improbable, nor unphilosophical; and only a *little less* evident than what this Proposition was to prove, *viz.* That the primary Orbits of the Planets were perfect Circles; but otherwise very much a-kin, and exceeding correspondent thereto; they at once receiving Light from, and affording Light to one another mutually.

VIII. The Ark rested on one of the *Gordyeen Mountains*, which separate *Armenia* from *Mesopotamia* and *Assyria*.

This is the commonly receiv'd Opinion, from which at present I see no Reason to recede. The Arguments usually urg'd for it, are thus briefly represented by the learned *Cellarius*, in his *Geo-L. 3. c. 11. graphia antiqua*.

“ *Strabo* says, that the Chain of Mountains which
 “ ran Eastward from Cappadocia and Comagena, p. 359.
 “ are first called *Taurus*; these separate *Sophene*,
 “ and the rest of *Armenia*, from *Mesopotamia*;
 “ τινες δὲ Γορδυαῖα ὄρη καλεῖσι, but some call them the
 “ *Gordyeen Mountains*. The Meaning of which
 “ Passage seems to be, that the *Gordyeen Moun-*
 “ tains are contiguous to *Taurus*, or are a Part
 “ of it; for by this Explication, the receiv'd

- Opinion that the Mountains of *Ararat*, on which
Noah's Ark rested, are the *Gordyeen* Moun-
 tains, is signally confirm'd; because *Noah*, with
 his Sons, descending from thence, came into
Mesopotamia, the first Seat of the Patriarchs [af-
 ter the Flood.] And that *Ararat* belongs to
Armenia, is the Opinion and Affirmation of al-
 most all Antiquity. Not to mention *Abydenus*
 and *Megasthenes*, whose Words *Eusebius* quotes;
Berosus, the *Chaldean* in *Josephus*, speaking of
Senacherib's paricide Sons, says, εἰς τὴν Ἀρμενίαν
 ἀπῆγον, they fled into *Armenia*; for which *Isaiah*
 says, they fled into the land of *Ararat*, which
 the Septuagint renders, εἰς Ἀρμενίαν, agreeably
 to *Berosus*. The vulgar Interpreter also ren-
 ders *Gen. viii. 4. Montes Armeniæ*, and *2 Kings*
xix. 3. Terram Armeniorum. So *Alcimus Avi-*
tus, Armeniæ celsis instabat montibus Arca.
 Let us next enquire in what Part of *Arme-*
nia this Mountain is, whereon the Ark rested.
St. Jerom says, *Ararat is a Champaign Country*
in Armenia, thro' which Araxes runs, being
very fruitful, and at the foot of Mount Taurus,
which extends it self thither. I approve not of
 his placing the Course of *Araxes* under Mount
Taurus, since they are at a great Distance from
 each other: But I allow what he says after-
 wards, that the Ark was carried to the highest
 Parts of Mount *Taurus*. All *Armenia* is ra-
 ther the same with *Ararat*; or, if a Part of
Armenia, then the Southern Part, which lies
 under Mount *Taurus*, from which the River
Araxes is far distant, according to *Strabo*, *Pliny*,
 and *Ptolemy*. By the Mountains of *Ararat*, ve-
 ry many understand the *Gordyeen* Mountains,
 which either are a Part of *Taurus*, or adjoining
 to it. *Berosus*, speaking of the Deluge, and
 of

“ of those few that were preserved in the Ark, Apud Jo-
 “ says, λέγει τὸ τῶ πλοῖος ἐν Ἀρμυρία πρὸς τῷ ὄρει τῷ
 “ Γορδυαίων ἐτι μέγ@ τι εἶναι. *Tis reported, that a* seph. An-
 tiq. i. 4.
 “ *Part of that Vessel [the Ark] is yet to be seen on*
 “ *the Mountains of the Gordyceans.* And in the
 “ *Targum of Onkelos upon Gen. viii. 4. the Moun-*
 “ *tains of Ararat are render'd the Mountains of*
 “ *Kardu in the Chaldee; and the other Targum,*
 “ *which goes under the Name of Jonathan, calls*
 “ *them the Mountains of Kadrun, by a Metathesis,*
 “ *except there has been a Mistake in the Tran-*
 “ *scribers. Thus also Epiphanius; ἐτι καὶ τὰ λείψανα* Hæref.
 “ *τῆ τῶ Νῶε λάεραν@ δέικνυ* xviii. ex-
 “ *χώρα. The Reliques of Noah's Ark are shewn in* trem.
 “ *the Country of the Cordyceans, even at this Day.*
 “ And Elmacinus, the Arabian, speaking of He- Hist. Sara-
 “ ræus, says, *He ascended up into the Mountain* cen. i. 1.
 “ *Cordi, and there saw the Place of [Noah's] Ark.*
 “ And so much may suffice for the Mountains of
 “ *Ararat, and the Place where the Ark rested.*
 “ *Bochart, in the 1st Book and 3^d Chapter of*
 “ *his Geographia Sacra, has more to the same*
 “ *Purpose.*

To these I shall add two other Arguments.
 (1.) The Ark rested upon that Mountain which
 then was the highest in the World: But those
 Mountains which lye on the North of Assyria
 (that is, the Gordyeen Mountains) are now the
 highest in the whole World, as † Theodoret
 and * Haitho the Armenian report; but were

† Theodoret. in Esai. xiv. 13. Ὁρ@ ὑψηλὴν εἴη λέγει
 βορράθεν Ἀσσυρίων καὶ Μήδων, ἀπὸ τῶτων, τὰ θυρικὰ διαείζον
 ἔθνη, πάντων τῶ καὶ τὸ οἰκαμένον ὄρων ὑψηλότετον.

* In Armeniâ est altior mons quàm sit in toto orbe ter-
 rarum, qui Arath vulgariter nuncupatur; & in cacumine il-
 lius montis arca Nohæ post diluvium primò sedit. Et licet

See Bo-
chart.
Phaleg.
1. 3. c. 3.

more certainly so at the Deluge, as will be hereafter prov'd, whatever Pretence any other may at present make. All therefore I am here to make out is, that the Ark must have rested on the highest Mountain in the World; which is easily done: For the Waters covering the Tops of all the highest Hills on the Face of the Earth 15 Cubits, or about 27 Feet; and yet the Ark resting the very first Day of the Abatement of the Waters, above two Months before the Tops of the other Mountains were seen (as will be prov'd hereafter:) 'tis evident, that the Ark rested on the highest Hill in the World at that Time, and therefore rested on the *Gordyeen* Mountains, which (as the forenam'd Authors say) are still the highest in the whole World.

(2.) 'Tis said, *Gen. xi. 2.* that the first Removal of the Fathers after the Flood towards the Land of *Skinar*, was *Mikkedem, Eastward*. For tho' most Translators render it *from the East*, † yet I rather suppose that the true Meaning is *towards the East*, or *Eastward*; since *Mikkedem*, in Scripture, is always used in this latter Sense, and never in the former. And particularly, in *Gen. xiii. 11.* 'tis joined in this Sense with the same Verb, as in the Place before us. *And Lot journeyed Eastward, &c.* For that he journeyed not *from the East*, appears from this very Chapter; where

propter abundantiam nivium, quæ semper in illo monte reperiuntur tam hyeme quam æstate, nemo valet ascendere montem illum; semper tamen apparet in ejus cacumine quoddam nigrum, quod ab hominibus dicitur esse arca. *Histor. Oriental. c. 9.*

† See *Gen. ii. 8. & iii. 24. & xii. 8. & xiii. 11. Numb. xxxiv. 11. Josh. vii. 2. Judg. viii. 11. Isa. ix. 12. Ezek. xi. 23. Job. iv. 5. Zech. xi. 4.*

we find his Road lay from *Bethel* and *Hai*, in the Tribe of *Benjamin*, towards the Plains of *Sodom*; and so he travelled *South-East*. And if the Ark rested on the Mountains between *Mesopotamia* and *Armenia*, the Journeying of the first Patriarchs after the Flood, from thence to the Land of *Shinar*, was towards the *South-East* also.

Scholium. In this Place, I cannot but propose a Conjecture I have for some Time had in my Mind about the Peopling of *China*; which I think may deserve to be consider'd; and 'tis this; that the *Chinese* are the Offspring of *Noah* himself after the Flood, and not deriv'd from any of his other Posterity, *Shem*, *Ham*, or *Japhet*, as the Inhabitants of the rest of the World are. This Conjecture depends on the following Reasons.

I. The Account of the Posterity of *Shem*, *Ham*, and *Japhet*, and of their Dispersion, gives no Hint of any that went so far *East* as *China*, as I think is plain from the best Expositions of the 10th of *Genesis*, where that Matter is chiefly treated of.

II. Since the Dispersion of the Posterity of *Shem*, *Ham*, and *Japhet*, appears to have begun about *Babylon*; a Country so remote as *China* could not be so soon reach'd and peopled, as the prodigious Numbers of its Inhabitants at present shew it to have been. The nearest Regions must have been first and most fully peopled; and the remoter not till Men were increas'd sufficiently to require new Habitations; and accordingly, it has happen'd in the Countries of *Europe*, *Africa*, and the *Western* Parts of *Asia*; to which, I suppose, the Dispersion begun at *Babel* is confin'd. But this is a
suffi.

sufficient Proof, that so very large and prodigiously populous a Country as *China*, could not be of so late an Original, as it must be in case the *Chinese* are deriv'd from this Dispersion.

Gen. ix.
19.

III. The sacred History, soon after the Flood, confines it self within the then known World: (which, I think, did not include *China*, no more than *America*, and which is styl'd the *whole Earth* very often in Scripture) and at the same Time says not a word of the great Father of the whole Race of Mankind, *Noah*, excepting the Number of Years he liv'd. Now this is, I think, a kind of Intimation, that *Noah* had no Share in the Actions related in the sacred History; and so, by a fair Consequence, was probably plac'd in *China*, a Region out of the Compass of the then known World.

IV. This Argument appears the more probable, because the Scripture tells us, as we have now seen, that all Mankind *journeyed Eastward* after the Flood. And tho' the Posterity of *Shem*, *Ham* and *Japhet*, stopt in the Land of *Shinar*, and there undertook to build a City, and a Tower; yet 'tis probable that *Noah* himself, together with his Wife and his young *Postdiluvian* Posterity, would not join with the rest of the World in that Undertaking, (which appears to be displeasing to God, since he miraculously defeated their Enterprizes,) but proceeded still in their Journey *Eastward*, till they came into *China*.

Vide Syn-
cel. p. 30,
31.

V. This is farther confirm'd by the ancient *Chaldean* Tradition concerning the Deluge, which informs us, that *Xisûthrus* (so *Noah* is there call'd) coming out of the Ark after the Deluge, with his Wife and Daughter, and the Pilot of the

the Ark, offer'd Sacrifice to God; and then both he and they disappear'd, and were never seen again: And that afterward *Xisuthrus's* Sons journeyed towards *Babylonia*, and built *Babylon*, and several other Cities.

VI. The *Chinese* Language and Writing are so entirely different from those with us, which the Confusion at *Babel* introduc'd, and are at so vast a Distance from them, that I think they cannot well be deriv'd from thence, nor from any of those Patriarchs whose Posterity was there divided into the several Parts of the World. All our Languages consist of Words and Syllables, made by a few Letters: which is wholly different from the way of expressing entire Sounds, and of varying the Sense by Tones or Accents among the *Chinese*. All which Circumstances persuade me, that their Original is different from ours: And that as we are the Offspring of *Shem*, *Ham* and *Japhet*, whose Sons were scatter'd from *Babel*; so are they of *Noah*, who was no way interested in that Dispersion, or in those Languages which are deriv'd therefrom.

VII. The learned Sciences seem to have been anciently much better known in *China*, than in these Parts of the World: Their Government and Constitution much firmer, and more lasting than Ours: Their most ancient Histories more authentick and certain than Ours; (excepting those of more than bare human Original.) All which Things make one ready to imagine, that as, 'tis probable, *Noah* might be much more wise and learned than any of his Sons; so all those Settlements, Laws and Traditions, which are deriv'd from him, are remarkable Effects
and

and Testimonies of the same: And therefore that in *China* (where these Effects and Testimonies chiefly appear) all those Prerogatives are owing to *Noah*, their original Founder, and no other.

VIII. There are some Reasons to believe, that the *Chinese* mean no other by their first Monarch *Fohi*, than *Noah* himself. For, 1. The Beginning of their History with the Reign of *Fohi*, will, if the second and third Families of their Kings were collateral, (as I have elsewhere shown they were) be coincident, even from the *Hebrew*, which, about the 235th Year after the Deluge, and consequently the End of *Fohi*'s Reign will be coincident with the Time of *Noah*'s Death. 2. The *Chinese* Histories say, that *Fohi* had no Father; which agrees well enough with *Noah*, because the Memory of his Father might be lost in the Deluge, or they could trace his Genealogy no higher, and so Occasion was given to this Fable, that he had no Father at all. 3. The same Histories affirm, that *Fohi*'s Mother conceiv'd him as she was encompass'd with a *Rainbow*; which seems an imperfect Tradition concerning the first Appearance of the *Rainbow* to *Noah* after the Flood. 4. The Character and Circumstances, and Appellation of *Fohi* among the *Chinese*, agrees exactly with what the Scriptures affirm of *Noah*. *Fohi*, says *Le Compte*, the first Emperor of China, carefully bred up seven Sorts of Creatures, which he used to sacrifice to the supreme Spirit of Heaven and Earth. For this Reason, some call him *Paohi*, that is, Oblation. *Noah*, says *Moses*, took into the Ark of every clean beast by sevens, the Male and his Female. And after the Flood, *Noah* builded

*Short View
of the Chronol.
of the Old Test.
p. 62, &c.
Gen. ix.
28.*

*Martinii
Hist. Sinic.
p. 21.*

Ibid.

*Gen. ix.
12—17.*

*Memoirs
of China,
p. 313.
and Cou-
plet's Con-
fucius
Procem.
p. 38, 76.
Gen. vii.
2, 3, 9.*

builded an Altar unto the Lord, and took of every clean beast and every clean fowl, and offer'd burnt-offerings on the Altar. 5. The Chinese Histories affirm, that *Fohi* settled in the Province of *Xensi*, which is the most North-West Province of *China*, as was natural to expect if he journeyed from the Ark, or from *Mesopotamia*. From all which Arguments, I think it very probable, that *Fohi*, the Founder of the Chinese Monarchy, was the same Person with *Noah* in the Scripture, and consequently, that the Chinese are the Offspring of *Noah*.

IX. All this will be further confirm'd, when we shall have shewn hereafter, that the Current of the Waters of the Deluge would carry the Ark a long way from *East* to *West*, and that *China* lies just *East* from the *Gordyeen* Mountains; so that *Noah*, before the Flood, must have liv'd in those *Eastern* Parts, and probably in no other than *China* it self. Since therefore 'tis so likely, that *Noah* liv'd in *China* before the Deluge, 'tis no wonder that he return'd to *China* again, and re-peopled the same with his own Offspring born after the Deluge; and that from this Difference in Original proceeds all that Difference in other Things, which is so remarkable, (if compar'd with the rest of the World) in that ancient, numerous and learned Nation.

X. The Deluge began, according to the modern *Hebrew* Chronology, on the 17th Day of the 2^d Month from the Autumnal Equinox, (or on the 28th of *Nov.* in the *Julian* Style, extended backward) in the 2365th Year of the *Julian* Period, and in the 2349th Year before the Christian *Æra*.

A Chronological Canon.

I. From the Beginning of the <i>Mosaic</i> Creation, till the Autumnal Equinox next after the Creation of <i>Adam</i> —————	Y. M.
II. From the Autumnal Equinox next after the Creation of <i>Adam</i> , till the Autumnal Equinox in the Year of the Deluge —————	6 0
III. From the Autumnal Equinox in the Year of the Deluge, till the Departure of <i>Abraham</i> out of <i>Haran</i> —	1656 0
IV. From <i>Abraham's</i> Departure out of <i>Haran</i> , till the <i>Exodus</i> of the Children of <i>Israel</i> out of <i>Egypt</i> —	427 6½
V. From the <i>Exodus</i> of the Children of <i>Israel</i> out of <i>Egypt</i> , till the Foundation of <i>Solomon's</i> Temple —	430 0
VI. From the Foundation of <i>Solomon's</i> Temple, till its Conflagration —	479 1
VII. From the Conflagration of <i>Solomon's</i> Temple, till the Beginning of the Christian <i>Æra</i> —————	424 3
VIII. From the Beginning of the Christian <i>Æra</i> , till <i>O. S. 11.</i> this Year 1736. —	586 6
Sum of all —————	1735 9½

From the 1st Day of the Deluge, till the 28th of } 4084 0
November, this very Year, 1736. —————

For

For the Proof of the several Parts or Periods of this *Canon*, I must refer my Reader to my *Short View of the Chronology of the Old Testament*. Only I must add a Word or two concerning the 3^d and 7th Periods; the former being a Year more, and the latter a Year less than I had before stated them. 1. Whereas the Scripture reckons 427 Years from the Flood till *Abraham's* Departure out of *Haran*, about the Vernal Equinox; I, in my Book, computed these Years from the Vernal Equinox in the Year of the Deluge, but now see Reason to compute them from the Vernal Equinox following; since this latter was but four Months after the End of the Flood, or Coming out of the Ark, whereas the former Vernal Equinox was eight Months before the Flood ended. 2. I allowed 587 Years and four Months, for the Period from the Conflagration of *Solomon's* Temple, till the Beginning of the Christian *Æra*; but now I state it at 586 Years, and four Months. For having, since the Publishing of my Chronology, discover'd, that according to the true and genuine Method of the *Canon*, the Regions therein mention'd, begin a Year later than according to the Method which I followed in my Book; I am thereupon obliged, in connecting the sacred Chronology with the prophane, to fix the Conflagration of *Solomon's* Temple a Year later, whereby the Period from thence to the Christian *Æra*, becomes a Year less than I had at first stated it: But the whole Sum, by the equal Addition and Subtraction, is still the same that it was before.

Vid. *Short View*, p. 70.
Gen. xii.
40, 41.

Gen. viii.
14, 15.
Short View,
Hyp. 6.
p. 8.

Short View,
p. 14.

N. B. The same Deluge began, according to the truer Chronology, from the *Samaritan* Pentateuch,

tateuch, *Josephus's* ancient *Hebrew*, and the LXXII. ancient *Greek* Copies, on the same 17th Day of the 2^d Month from the Autumnal Equinox, (or on *December* the 2^d, in the *Julian* Style extended backward;) in the 1788th Year of the *Julian* Period, and in the 2926th Year before the Christian *Æra*.

This has been proved, at least within a very few Years, in *My Essay towards restoring the true Text of the Old Testament*, lately publish'd, under *Prop. XI*, to which I must refer the Reader.

N. B. Before the Reader proceed to the next *Hypothesis*, he is to observe that it is not of my Composure; but is a short tho' excellent Dissertation of my Learned Friend Mr. *Richard Allin*, Fellow of *Sidney-College*; with which, at my Desire, he has been pleas'd to permit me to enrich the later Editions of my Theory.

XI. The most ancient *Civil* Year in most Parts of the World *after* the Deluge; and also the *Tropical Solar* and *Lunar* Year *before* the Deluge, contain'd just 12 Months of 30 Days apiece, or 360 Days in the whole.

First, I shall endeavour to prove, that the most Antient Year in *Civil* Use almost throughout the World, for several Ages *after* the Deluge, contain'd exactly 360 Days, or 12 Months of 30 Days apiece. *Secondly*, That *before* the Deluge, not only the *Civil* Year, but also the *Tropical Solar*

lar Year, wherein the Sun passes through the Ecliptick, to the same Point from whence it began; and likewise the *Lunar* Year, consisting of 12 Synodical Months, each from New-Moon to New-Moon, or from Full-Moon to Full-Moon, were severally just 360 Days long; and consequently, that the *Lunar* Month was exactly 30 Days.

And, *First*, I am to prove, that the most ancient *Civil* Year and Month were of this Length, in most Places, *after* the Deluge.

(1.) This appears by that Testimony mentioned in *Georgius Syncellus*,^a which informs us, that the additional five Days, even amongst the *Egyptians*, one of the most ancient and learned Nations in the World, were not originally added to the 360 Days, or 12 Months of 30 Days apiece, of which their Year consisted, but were introduc'd about a thousand Years after the De-

Vid. Marsham. Secul. X. Tit. Annæ Reformatio.

(2.) This Argument, from the latter Introduction of the five additional Days, receives some Confirmation from the *Place* they always possess'd in the Year, even after they were introduced in the *Egyptian*, and thence in the *Nabonassarean* Form; which was at the *End* of the whole Year, as *ἡμέραι ἐπαγόμεναι*, *additional* or *su-*

^a Syncel. pag. 123. Οὕτω [Aeth, seu Assis, Rex] προσέθηκε τῷ ἐνιαυτῷ τὰς ἐπαγόμενας, τὸ ἐπὶ αὐτῷ, ὡς φασιν, ἐξημερίσεν τῆς ἡμερῶν ὁ Αἰγυπτιακὸς ἐνιαυτός, τῶν μόνον ἡμερῶν πρὸς τὰς μετέμειναν.

perabundant Days. Which Manner of adding them at the Year's End, seems naturally to imply, that the several Months had been so long stated at 30 Days apiece, and so the whole Year at just 360 Days, that they could not think fit to alter them, but only ventur'd to add five Days at the End of the Year; which indeed were scarce accounted a Part of it: Still implying and supposing, that the ancient and stated Year was made up of 12 Months of 30 Days apiece, or of 360 Days in the whole, and no more.

(3.) And what is but conjectur'd at in the last Argument, is particularly asserted in a famous Tradition in ^b *Plutarch*, from whence it appears, that the ancient *Egyptian* Year was no more than 360 Days; and that the five *Epagomenæ* were not look'd upon as proper Parts either of the Year, or of any of its Months, but as Days belonging to the Nativities of five several *Egyptian* Deities, who, as this present Piece of Mythology supposes, were *to be born neither in any Year, nor in any Month*, and that thereupon, these five Days were added to the ancient Year; which therefore, before this Addition was made, contained no more than 360 Days.

(4.) That the most ancient *Chaldean* or *Babylonian* Year was just 360 Days, appears by

^b *Plutarch. de Iside & Osiride, Operum Moral. p. 355.*
 Τῆς Ῥέας φασι, κρύφα τῷ Κρόνῳ συγχνομήνης, αἰσθόμενοι ἐπα-
 ρέσασθαι τὸ Ἥλιον αὐτῇ, μήτε μηνί, μήτε ἐνιαυτῷ τεκεῖν· ἐξῶντα
 3 τὸ Ἑρμῶ τ' Ὀεῦ σσελεθῆν, εἶτα παύσαντα πέτλια πρὸς τὸ
 Σελήνῳ, & ἀφελόντα τῷ φῶτι ἐκάστῃ & ἐβδομηκοσδν, ἐν πάν-
 των ἡμέρας πέντε σσελεθῆν. καὶ ταῖς ἐξήκοντα καὶ τετρακοσίας
 ἐπέχειν, ὥς Ὀεῶν θνητοῖς ἄγεσι.

that Number of Furlongs for the Compass of the Walls of *Babylon*, which, as ^c *Q. Curtius* and ^d *Tzetzes* affirm, were built in a Year, a Furlong each Day. For tho' ^e some, who wrote about the Time of *Alexander* the Great, and seem to have known either that the Solar Year was about 365 Days long, or that the Astronomical Year at *Babylon* it self was of that Length, do say, that the Compass of the Walls was 365 Furlongs; yet ^e *Ctesias*, who wrote before that Time, in the Reign of *Artaxerxes Memor*, says, with greater ^f Probability, that the Number of Furlongs was but 360. And since even those later Writers add, that *Babylon* was as many Furlongs in Compass, as there were Days in the Year; 'tis more than probable, that they erroneously concluded from thence, that because the Tropical Year (or the Astronomical Year of *Nabonassar*)

^c *Q. Curt. lib. 5. cap. 1.* Singulorum stadiorum structuram singulis diebus perfectam esse, memoriae proditum est.

^d *Tzetz. Chil. ix. § 563. De Babylone.*

Ἐκτισε ταύτην ὁ ἐνιαυτὸς καὶ μόνον.

^e *Diodor. Sic. lib. 2. pag. 68.* Περιβάλλει τὸ τεῖχος τῆ πόλεως [Babyloni] σταδίων τετρακοσίων ἐξήκοντα, — ὡς φησι Κτησίας ὁ Κνίδιος. ὡς ὁ Κλέταρχος, καὶ τὸ ὕστερον μετ' Ἀλεξάνδρου Ἀφιδάτων εἰς τὴν Ἀσίαν τινὲς ἀνέγραψαν, τετρακοσίων ἐξήκοντα καὶ πέντε καὶ περσιδέασιν, ὅτι τὸ ἴσον ἡμερῶν εἰς τὸ ἐνιαυτὸν εἰσὼν, ἐφιλοτιμήθη τὸ ἴσον ἀριθμὸν πρὸ σταδίων καταστήσασθαι. Vide

& *Tzetz. Chil. ix. § 568. &c.*

^f *Tzetz. Chil. ix. § 579.*

φαίνεται ὁ Κτησίας

Τῷ Τζέτζη ἀληθέστερον συγγραφέν πρὸ ἑτέρων,

Τίως εἰς ἀπὲρ ἔγραψε πρὸ τῶ Βαβυλωνίου.

Τετρακοσίων γὰρ αὐτὸς ἐξήκοντα σταδίων

Πᾶσαν αὐτῆς περιμέτρον ὑπάρχεν ἀναγράψαι

Οἱ δ' ἄλλοι πρὸς αὐξάνουσι πλεον καὶ πλεον ταύτην.

had 365 Days in it, therefore *Babylon* was 365 Furlongs in Compass. Thus then we see the Testimonies of several Authors, that the Walls of *Babylon* were as many Furlongs in Compass as there were Days in the Year; and that the oldest and best Testimony asserts, that they were 360 Furlongs in Compass: Wherefore it must be concluded highly probable at least, that the most ancient *Babylonian* Year was exactly 360 Days long.

(5.) All this is more fully confirm'd by a contemporary Author, the Prophet *Daniel*, who liv'd and wrote in *Babylon* in the Reign of *Nebuchadnezzar*^s, who built those Walls. For
 Dan.xii.7. *Daniel*, by his *Time, Times and a half*, or three
 Apoc.xii. 6, 14. Years and a half, as we are sure from *St. John's* Exposition of them, means 1260 Days; and consequently by a single *Time*, or one Year, means no more than 360 Days; according to the usual Computation of the Age and Nation in which he liv'd.

(6.) We find also several Footsteps and Remains of this old Year in the *Medo-Persian* Monarchy, which subdu'd the *Babylonian*. As in the
 Herodot. i. 189. 360 Channels, which *Cyrus* cut, to make the River *Gyndes* fordable for his Army, when he went on his Expedition against *Babylon*: And (if *Josephus* be not mistaken) in the 360 *Satrapæ*, which
 Antiq. x. 12. p. 352. *Darius* set over so many Provinces of his Em-
 C.

^s Vide *Beros.* apud *Joseph.* Antiq. x. 11. p. 349. F. G. Et *Abyden.* apud *Euseb.* Præpar. ix. 41. p. 457. C. Et *Dan.* iv. 30.

pire. Thus also the sacred Historian assures us, that King *Abasuerus* made a feast unto all his Prin-^{Eth. i. 3,}ces and his servants many days, even 180 days; i. e. ^{4.}a just Half-year's Feast, that Number being exactly half 360. Thus also the *Periodus Mago-*^{Emend.}*rum*, mention'd by *Scaliger*, was 360,000 Years, ^{l. i. P. 19.}i. e. Days, or a just *Millennium*. In all which Instances, a plain Reference is had to the Year of 360 Days, then in use.

(7.) That the *Persian Year* contain'd but 360 Days, is still more evident from the Testimonies of ^h *Plutarch* and ⁱ *Curtius*; who affirm, that the Number of the Royal Concubines to more than one of the *Persian Kings*, was just 360. And we know both from Scripture and ^{Eth. ii.}^k *Herodotus*, that they went in constant Courses ^{12—15.}to their Kings. And since their Number answers so exactly to the Days in the ancient Year, according to the other Testimonies: Since also a Year is so natural and obvious a Length for one of those Courses; nay, since *Diodorus Siculus* ¹ directly affirms, that the Royal Concubines were just as many as the Days of the Year; 'tis plain, the *Persian Year* had just 360 Days. Nay, even in much later Times, we find in the *vid. Wal-**Arabick Historians*, that *Ardshir Ebn Babec*, who ^{lilii Opus}^{Arithmet.}^{c. 31.}

^h Plutarch. in Artaxer. Vitarum, pag. 1025. Ἐξήκοντα ὃ καὶ τετρακίσια παρετρέφοντο καὶ καὶ ἀφ' ἑρμῶσαι παλλακίδες.

ⁱ *Curt. lib. 6. cap. 6.* Pellices 360, totidem quot Darii fuerant, Regiam implebant.

^k Herodot. iii. 69. Ἐν περὶ τρηπῇ γὰρ δὴ γυναικες φοιτῶσαι τοῖς Πέρσῃσι.

¹ Diodor. Sicul. lib. 17. p. 603. Τὰς παλλακίδας ὁμοίως τῷ Δαρείῳ περὶ γὰρ τὸ μὲν ἀριθμὸν ἔσας ὅτι ἐλάττω τῷ καὶ τὸ ἐνιαυτὸν ἡμερῶν.

was King of *Persia* in the third Century of Christianity, was the Author of the Play which we call *Tables*: In which he appointed twelve Houses, or *Areolæ*, to correspond to the twelve Months of the Year, and thirty *Calculi* or Table-men, to answer to so many Days in every Month. A plain Instance (if not of the then present Length of the *Persian* Year and Months, yet at least) of the Tradition they still retain'd, that originally the *Persian* Year was just 360 Days, containing twelve Months of thirty Days apiece.

Natural
and Moral
Hist. of the
Indies,
l. 6. c. 2.

(8.) There is also no small Probability, that the most ancient Year of the *Mexicans* in *North-America* (who seem to have had their Original from some of the *Eastern* Nations) was also exactly 360 Days. This People (as *Joseph Acosta*, amongst others, informs us) “ divided their Year into
“ Months, to [each of] which they gave 20
“ Days, wherein the 360 Days are accomplished,
“ not comprehending in any of these Months the
“ 5 Days that remain and make the Year perfect.
“ But they did reckon them apart at the End of the
“ Year, and called them Days of Nothing: During
“ which, the People did not any thing; neither went
“ they to their Temples, but occupied themselves
“ only in visiting one another, and so spent the
“ Time. The Sacrificers of the Temple did like-
“ wise cease their *Sacrifices*.” Since then the
Mexicans, even till these later Times, esteem'd
as nothing those 5 Days, that were added to the
other 360 at the End of the Year, and accordingly spent them in mere Idleness; 'tis very
probable they did this, to signify, that those additional Days were not to be look'd upon as
any real Part of the Year, as they certainly were
not

not of any of its Months: Or, at least, to signify, that they did *not originally* belong to the Year, but were added to it in later Times, to make it more agreeable to the Solar Year. And if so, it must be allow'd, that the primitive Year of the *Mexicans* contain'd just 360 Days, and no more.

(9.) The only Year among the ancient *Greeks*, and the Nations descended from them, that can come in Competition with this Year of 360 Days, is the Tropical Year, or a Year made very nearly equal to the Tropical by Cycles of Years, or proper Intercalations of Months or Days in certain revolving Periods. And that this Year was not originally in civil Use amongst 'em, appears very probable from the most ancient Manner of determining the Seasons of the Year, which was not done by the Names of the Months and Days of the civil Year, but by the heliacal Rising and Setting of the fix'd Stars, as is well known to all that are conversant in the old Poetry and Astronomy. Now if the Tropical Year, or a Year made equivalent to it by proper Intercalations had been the civil Year; it can hardly be imagin'd, that the easy and obvious Method of reckoning the Seasons by the Months and Days of the civil Year should be entirely neglected; and so odd and troublesome a Method as that of fixing them by the heliacal Rising and Setting of the fix'd Stars, should be entertain'd in its stead. And in Confirmation of this Reasoning, ^m *Diogenes Laertius* says, that

^m Diog. Laert. i. 27. in vita Thaletis. Τὰς τε ὥρας ὅσας αὐτὸς φασὶν αὐτὸν εὐρεῖν, καὶ εἰς τετρακοσίας ἐξήκοντα πέντε ἡμέρας διελεῖν.

vid. Arg.
16. infra.

Thales the Milesian, was the first of all the *Greeks* who discover'd the Length of the four Seasons of the Year, and that the Tropical Year was 365 Days in Length. And tho' *Solon* is said to have made the Month conformable to the Motion of the Moon at *Athens*; yet even he himself was utterly ignorant of the Tropical Year, if he really had that Discourse with *Cræsus* King of *Lydia*, which ^a *Herodotus* relates he had. For he there supposes, that if the Year of 360 Days had an embolimary Month of 30 Days added to it every other Year, it would thereby become equal to the Tropical Year. Whereby 'tis plain, he took the Tropical Year to be 375 Days long, which is above 9 Days and 18 Hours more than the Truth. Wherefore I think it may be concluded, that till after the Time of *Solon*, (or if this Discourse with *Cræsus* be feign'd by *Herodotus* under *Solon's* Name, then even till *Herodotus's* Time, which is above 100 Years later, the ancient *Greeks* were generally ignorant of the true Length of the Tropical Year; and consequently, the most ancient *Grecian* Year was not equal to the Tropical. And if so, the following ancient Testimonies will be undoubted Evidence, that it was of no other Length than 360 Days.

(10.) That the ancient Year of *Greece*, *Lydia*, and the *Grecian* Colonies in *Asia*, was just 360 Days, appears from several Testimonies. There

^a Herodot. i. 32. Ἐς ᾧ ἐβδομήκοντα ἔτη ἔργον τῆ ζωῆς ἀνθρώπου περσίδημι. Οἱ τοι ἔοιες εἰναυτοὶ ἐβδομήκοντα, παρέχοντες ἡμέρας ἀγροστίας καὶ πεντακισχίλιας καὶ δισμυρίας, ἐμβολίμῳ μηνὸς μὴ γηνομένη. Ἐν δὲ ἐδελεσθ' ἑτέρῃ μὲν μακρότερον γίνεσθαι, ἵνα καὶ αἱ ὥραι συμβαίνωσι ἀναγνώμεναι ἐς τὸ δέον, μήνες μὲν ὡς τὰ ἐβδομήκοντα ἔτη οἱ ἐμβολίμοι γίνονται τετράκοντα πέντε, ἡμέραι δὲ ἐκ τῶν μηνῶν τούτων, χίλιας πεντήκοντα.

is a clear Intimation of this in the 360 Gods, which (as *Justin* ° *Martyr* assures us) that most ancient Poet and Philosopher, *Orpheus*, introduc'd; one, it seems, for every Day in the Year. The same Thing may be concluded from the before-cited Testimony of *Herodotus*, (of *Halicarnassus*, a Grecian City in Asia) who introduces *Solon* discoursing with *Cræsus*, King of *Lydia*; where he says, that 70 Years (*viz.* either *Asiatick* Years, even till *Herodotus's* Time, or at least *Lydian* Years in the Time of *Cræsus*) contain'd 25,200 Days: From whence it follows, that a single Year, at the same Time, contain'd just 360 Days. This is also prov'd from the Riddle of *Cleobulus*, Tyrant of *Lindus*, a City of *Rhodes*. There is, says he, one Father who has 12 Children, and each of these has 60 Daughters, 30 of them white, and 30 of them black; all of them being immortal, and yet mortal continually. By which all agree, that the Year is meant with its 12 Months, and each of their 30 Days and 30 Nights. Thus also *Hippocrates* (of the Island *Cos*, in the *Egean* Sea) affirms, that 7 Years contain 360 Weeks, and so one Year 360 Days: And also that seven

° *Justin. Martyr de Monar. Dei*, p. 104. Edit. Paril. Ὁ φῶς, ὁ παρεισάγων τὰς τριακοσίας ἐξήκοντα Θεοὺς, ἐν τῷ Διόσκου ἐπιγγραφομένῳ βιβλίῳ, &c. Vide & *Theoph. ad Autol.* l. 3. sub initio.

P *Diog. Laert.* i. 91. in vita *Cleobuli*. Φέρεται δ' αὐτῷ ἐν τοῖς Παμφίλῳ ὑπομνήμασι τὸ αἰνίσμα τοιοῦτον.

Εἰς ὁ πατήρ, παῖδες δ' δώδεκα ἢ ἢ χ' ἑκάστη

Παῖδες δὲς τριάκοντα, Διάνδιχα ἑδὼ ἔχουσαι

Αἱ μὲν λευκαὶ ἔασιν ἰδεῖν, αἱ δ' αὖτε μέλαναι

Ἀθάνατοι ἢ τ' εἶναι, ἀποφθινύθουσιν ἅπασαι.

Ἔστι δ' ὁ ἐνιαυτός.

q *Hippocrat. de Carnibus. Operum*, p. 254. Edit. Genev. 1657. Ἐννέα δ' μηνῶν καὶ δέκα ἡμερῶν γόνος γίνεσθαι καὶ ζῆ, καὶ ἔχει τὸ ἀεὶ μὲν ἀτρεκέα ἐς τὰς ἐβδομάδας. Τίσιν αὖτε δεκάδες

Months

Months are 210 Days; and 9 Months and 10 Days, are just 280 Days: And elsewhere, ' that nine Months contain'd 270 Days, according to the Computation of the Grecians. From all which it is evident, that 30 Days were then allowed to a Month, and 360 Days to a Year.

(11.) That the most ancient Year at *Athens*, in particular, was 360 Days, and the Month 30 Days, appears from the very original Constitution of the City of *Athens* it self; which, as we learn from ' *Harpocratio*, ' *Julius Pollux*, and ' *Suidas*, was divided (to use the Words

ἐβδομάδων ἡμέραι ἦσιν διηκόσαι ὀγδοήκοντα, — "Ἐχθ' ἢ καὶ τὸ ἐπιδέκοντον τρεῖς δεκάδας ἐβδομάδων, ἐς ἃ τὴν δεκάδα ἐκάστω ἐβδομήκοντα ἡμέραι τρεῖς δεκάδες ἢ ἐβδομάδων αἱ σύμπασαι, δέκα καὶ διηκόσαι — "Ἐστὶ ἢ καὶ ἄλλο τεκμήριον, τὰς ὁδόντας οἱ παῖδες ἐπὶ τοῖς ἐτέων διελθόντων πληρεσὶ. Καὶ ἐν ἐπὶ αὐτοῖς, ἐστὶ ἢ λόγος καὶ ἀριθμῶ ἀντρεκέως, δεκάδες ἐβδομάδων ἐξήκοντα καὶ τετηκόσαι.

' Idem, de Morbis vulgarib. L. 2. Sect. 3. Operum, pag. 1031. 'Εἰς ἐβδομήκοντα καὶ διηκοσίῃσιν, οἱ ἐνέα μῆνες Ἑλληνικοὶ γίνονται.

' *Harpocratio* voce Γεννητή. — Διηρημένων — ἀπάντων τῶν πολιτικῶν καταμέτρων, τὰ μὲν πρῶτα καὶ μάλιστα μέρη ἐκαλῶντο φυλαί. ἐκάστη δὲ φυλὴ τετραγώνῃ διήρητο, καὶ ἐκαλῶντο ἑκάστον μέρος τῶν τετραγώνων, τετλίς, καὶ ἔθνος, καὶ φρατρία. Πάλιν δὲ τῇ φρατρίᾳ ἐκάστη διήρητο εἰς γῆν τετράκοντα, ἐξ ὧν αἱ ἱεροσυνῶν ἐκάστοις προσήκουσαι ἐκατέρωθεν.

' *Jul. Pollux*, lib. 3. Segm. 52. Φρατρία δ' ἦσαν δυοκαίδεκα, καὶ ἐν ἐκάστῃ γῆν τετράκοντα, ἑκάστον ἐν τετράκοντα ἀνδρῶν.

Et lib. viii. Segm. 109, 111. 'Ο μὲν δὲ Τετλίς ἀρχὴν, τετρίαν ἐκαλῶντο. Τετρίαν δ' ἐκάστης γῆν τετρά [lege τετράκοντα, ut apud eund. lib. iii. Segm. 52. supra, & infra Segm. 111.] καὶ αἱ φυλαί, τῶς μὲν ἐπὶ Κέρκω, ἦσαν τέσσαρες, Κέρκω, Αὐτόχθων, Ἀκλαία, Παρφαλία. Ἐπὶ δὲ Κερναῖ μετενομάσθησαν, Κερναίς, Ἀθίς, Μεσόγαια, Διακεί. Ἐπὶ δὲ Ἐρεχθίδος, Διᾶς, Ἀθηνᾶς, Ποσειδωνίας, Ἡφαιστίας. Ἀπὸ δὲ τῶν ἱερῶν παίδων ἐπὶ Ἀρεχθίδος, Τελέωνες, Ὀπλητες, Αἰγυκῶρες, Ἀργαδαί. — [Segm. 111.] ὅτε μὲν τοὶ τέσσαρες ἦσαν αἱ φυλαί, εἰς τετρά μέρη ἐκάστη διήρητο καὶ τὸ μέρος τῶν τετρά ἐκαλῶντο τετλίς, καὶ ἔθνος, καὶ φρατρία. Ἐκάστη δὲ ἔθνος γῆν τετράκοντα, ἐξ ὧν ἀνδρῶν τοσούτων αὐτῇ ἐκαλῶντο τετράδες.

' *Suidas* in Γεννητή. 'Αἱ δὲ φρατρίαι ἐκατέρωθεν τετλίς, ὅτι

of

of the last) into 4 Tribes, in Imitation of the 4 Seasons of the Year; which Tribes contained 12 *Φεστείας*, corresponding to the 12 Months; and each *Φεστεία* had 30 *ἡμέραι*, answering to the 30 Days of each Month; so that all the *ἡμέραι* collected together, were 360, as many as the Days of the Year. Which Words, in the Opinion of a learned Man, do not only demonstrate the true Length of the Primitive *Athenian* Year, but also give the Reason of it; from the original Constitution of the City it self. That they demonstrate the true Length of the Primitive *Athenian* Year, I acknowledge, is very plain: But (with Submission) they are so far from deriving this Year, with its 4 Seasons, 12 Months, and 30 Days in each Month, from the Constitution of the City, that they assert, on the contrary, the City was so divided and constituted in Imitation of the Year, and of its 4 Seasons, 12 Months, &c. And if *Athens* was a Colony of the *Egyptians*, as seems exceeding probable, there can be no doubt but that the ancient Year of 360 Days and 12 equal Months, (the only Year and Months the *Egyptians* then made use of) gave birth to the aforesaid Constitution of that City, and so were evidently the primitive Year and Months in civil Use at *Athens*.

(12.) That the *Athenians* retained the Year of 360 Days, and the Month of 30 Days, till after the Time of *Alexander* the Great, (either solely, as some learned Men hold; or at least, together with the *Lunæ-Solar* Year, as *Theodorus*

τεσσαρῶν φυλῶν ἡσῶν, εἰς τεῖλα ἐκάστη διῆλον μέγῃ τὰς μὲν φυλαῖς τέσσαρες ποιήσαντες, ἀπομιμησάμενοι τὰς ἑνὶ αὐτῇ ἔσσης. τὰς δὲ φεστείας καὶ τετταρτῆς ἰσὶ, καθάπερ οἱ μῆνες. τὰ δὲ ἡμέραι αὖ ἐν ἐκάστῃ φεστείᾳ, καθάπερ αἱ ἡμέραι τῆς. [Lege cum Maussac & Kustero, τῆς.]

^w Theodor. Gaza de Mensib. cap. 9. Δίχως δὲ ἰστέον

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Gaza

Gaza was of Opinion) may be proved from the Books of ancient *Athenians*, yet extant, as well as by other Authorities. Thus ^x *Xenophon*, in his excellent Discourse of the Revenue of the State of *Athens*, always takes it for granted, that a Year did then contain 360 Days, and no more; as his late Translator, in his Notes, particularly observes and demonstrates. And ^y *Plato*, in his 6th Book *de Legibus*, would have the Senate of the New Commonwealth he is there describing, to consist of 360 Men, to be divided into four Parts, of 90 each; in this, alluding plainly to the Year of 360 Days, and its four Quarters. And ^z *Aristotle*

[*Athenienfes*] τ' ἐνιαυτὸν, οἷον τ' ἢ ἐξήκοντα καὶ τετρακοσίας ἡμέρας ὁρίζομεν πρὸ ἡλίου, ἀφ' οὗ εἰς τοσαύτας μοίρας κατατομῇ τὸ λῶξ. Καὶ τότε ὃ μέρες πέντε καὶ ἑκατομῶντα εἰσὶν αἱ φησὶν ἡμέρας ἐδομήκοντα καὶ δύο. Τὸν δ' ἐτίτλασι καὶ πενήκοντα καὶ τετρακοσίας, τῇ σελήνῃ. Ἀνάλογον δ' καὶ τὰς μῶνας ἡγόν, τὰς μὲν καὶ τ' ἡλίου, τὰς δ' καὶ τὴν σελήνῃ.

^x *Xenophon de Vestigalib. Operum* p. 731. Edit. Basil. 1572. "Ἦν γε μὴν οἱ τὸ πρῶτον συστῇ ἀγροκόσια καὶ χίλια ἀνδράποδα, εἰκὸς ἤδη ἀπ' αὐτῆς τ' πρῶτόθεν ἐν ἔτεσι πέντε ἢ ἑξ, μὴ μείον αὐτῇ ἐξακχιλίῳν ἡμέρα. Ἀπόγε μὴν τότε τὰ ἀεθμοί, ἣν ὁβολὸν ἕκαστος ἀτελῇ τ' ἡμέρας φέρῃ, ἢ μὲν πρῶτόθεν ἐξήκοντα τάλαντα τὰ ἐνιαυτῷ. Upon which words, the English Translator has the following Note, p. 54. of the Revenue of the State of Athens. "This Computation proves, that Xenophon reckon'd 360 Days to the Year: For 6000 Oboli multiplied by 360, make 2160000 Oboli; which Sum divided by 600, (for 600 Oboli make a Mina) makes 3600 Minæ, which divided by 60 (for 60 Minæ make a Talent) reduces the whole Sum to 60 Talents. And the following Computation of 100 Talents a Year, produc'd by 10000 Oboli a Day, answers exactly to the former." *Xenophon's* Words referr'd to in this Place, are these, *ibid.* "Ὅταν δ' ἐγε μυρία ἀναπλησθῇ, ἑκατὸν τάλαντα ἢ πρῶτόθεν ἔσται.

^y *Plato de Legib. l. 6.* p. 615. D. Edit. Lugdun. 1690. Βαλλὲν δ' ἔτι μὲν τετράκοσια δωδεκάδας ἐξήκοντα καὶ τετρακοσιοὶ γίνονται ἀν' ἑξήκοντες ταῖς ἀγρομαῖς. μέση δ' ἀγρομαῖας τέταρα καὶ ἐνενήκοντα τ' ἀεθμόν.

^z *Aristot. Hist. Animal. vi. 20.* Κύει δ' ἢ μὲν Ἀσκανική, expressly

expresly assures us, that the 5th Part of a Year was 72 Days, and the 6th Part was 60 Days; and so, by plain Consequence, the whole Year must have been 360 Days. Lastly, ^a *Pliny*, ^b *Laertius*, and ^c *Varro* inform us, that at *Athens*, *Demetrius Phalereus* (after the Time of *Alexander the Great*) had just 360 Statues erected to his Memory, *the Year at that Time* (as *Pliny* says expresly, and the other two as expresly as he, if their Testimonies be taken jointly) *not having any greater Number of Days in it than 360.*

(13.) This ancient Year of only 360 Days, appears also to have been the first *Roman Year* before *Numa Pompilius's* Correction. For ^d *Plutarch*, in the Life of *Numa*, says, That “ during “ the Reign of *Romulus*, some Months were not “ 20 Days long, and others contain'd 35 Days “ or more; the *Romans* not then sufficiently understanding the true Length of the Solar or “ Lunar Periods; *but only providing for this one*

ἔκτον μέρϑ τῷ ἐνιαυτῷ. Τῷτο δέ ἐστιν ἡμέρασι ἐξήκοντα — “ *Ενιαυτῷ* ἡ κύνει τῷ κυνῶν τὸ πέμπτον μέρϑ τῷ ἐνιαυτῷ. Τῷτο δέ ἐστιν ἡμέρασι ἐξήκοντα καὶ δύο.

^a *Plin. Hist. Nat. xxiv. 6.* Nullique arbitror plures statuas dicatas, quam Phalareo Demetrio Athenis, siquidem 360 statuere, quas mox laceraverunt, nondum anno hunc numerum dierum excedente.

^b *Diog. Laert. v. 75. in vita Demetrii.* Καὶ εἰκόναν ἡξιώθη χαλκῶν ἐξήκοντα πρὸς ταῖς τετρακοσίαις.

^c *Varro apud Nonium.*

Hic Demetrius æreas tot aptu'ft,

Quot lucas habet annus absolutus.

^d *Plutarch. Vitæ, p. 71.* Ῥωμύλε γὰρ βασιλεύοντι, ἀλόγως ἐχρῶντο τοῖς μηνὶ καὶ αἰτάκῳ, τὰς μὲν εἰς ἑξήκοντα ἡμερῶν, τὰς δὲ πέντε καὶ τετράκοντα, τὰς δὲ πλεόνων λογιζόμενοι, καὶ οὐ γινώσκοντες ἀνωμαλίας πρὸς τὴν σελεύην καὶ τὸ ἥλιον ἔκκειαν ὅσα ἔχοντες, ἀλλ' ἐν μὲν φυλάττοντες μόνον, ὅπως ἐξήκοντα ἑ τετρακοσίων ἡμερῶν ἐνιαυτὸς ἔσται.

“ *thing,*

“ thing, that the whole Year should contain just
 “ 360 Days. & that the Year should be

(14.) That this was the Primitive Roman Year, will appear very probable also from the Julian Calendar it self, which intercalates the Bissextile Day immediately after the *Terminalia*, the ^e last Day of the ancient Year; that is, immediately before the 5 last Days of *February*, the last Month in the ancient Year: So that the 5 last Days of *February* every common Year, and the 6 last every Bissextile Year, are to be reckon'd intercalary, or additional Days to the other 360. And indeed St. ^f *Augustin*, speaking of those who reckon'd the *Antediluvian* Years to be no more than 36 Days, the 10th Part of the Lunar Year, which he suppos'd to be 360 Days; to which the $5\frac{1}{4}$ Days were afterwards added to fill up the Solar Year; directly says, that the *Romans* called all those Five (or Six Days in a Bissextile Year) *intercalary Days*. And tho' an intercalary Month, in the Times immediately before the *Julian*

*Vide Eryc.
 Putean. de
 Bissextis,
 c. 4.*

^e *Varro de Lingua Latinâ, lib. 5. cap. 3.* Terminalia, quod is dies anni extremus constitutus: Duodecimus enim mensis fuit Februarius; & cum intercalatur, inferiores quinque dies duodecimo demuntur mense.

^f *Augustin. de Civit. Dei. xv. 12.* Unum annum qualem nunc habemus, in decem partes illi dividebant, & easdem partes annos vocabant. Quarum partium habet unaquæque quadratum senarium; eo quod Deus sex diebus perfecit opera sua, ut in septimo requiesceret. Sexies autem seni, qui numerus quadratum senarium fecit, triginta sex dies fiunt; qui multiplicati per decem, ad trecentos sexaginta perveniunt, id est, duodecim menses lunares. Propter quinque dies enim reliquos, quibus solaris annus impletur, & diei quadrantem, propter quem quater ductum eo anno quem bissextum vocant, unus dies adjicitur, addebantur à veteribus postea dies, ut occurreret numerus annorum; quos dies Romani intercalares vocabant.

Corre-

Correction, was inserted in the same Place where the Bissextile Day is inserted now; yet, 'tis probable, from what *St. Austin* says, and indeed from the Agreeableness of the Thing it self, that the *first* Correction of the ancient Year of 360 Days, was made by adding the 5 Days aforesaid to the End of it.

(15.) That the original *Roman* Year was exactly 360 Days, is farther proved; because a tacit Year of that Length was retain'd in the *Roman* Empire, for the anniversary Celebration of some particular Solemnities, long after the Establishment of the *Julian* Year; as appears from some Inscriptions in *Gruter*: Concerning which, hear the Words of the famous Cardinal *Noris*. P. 1087.

“ In harum Inscriptionum unâ dicitur Nonius
 “ Victor cum Aurelio Victore, *Datiano & Ce-* Inscrip. 5.
 “ *reale Cofs*, tradidisse LEONTICA XVI. *Noris de*
 “ KAL. APRIL. Et in alterâ memorandum anno, &c.
 “ iidem, *Eusebio & Hypatio Cofs*, iterum tradidisse Syro-Ma-
 “ LEONTICA IV. IDUS MARTIAS. ced. p. 4.

“ Erant sacra anniversaria, quæ anno evoluta,
 “ ab iisdem instaurata fuerunt. Priora peracta
 “ sunt anno Christi 358, die 17 Martii; altera
 “ anno 359, die ejusdem mensis 12, jam evolu-
 “ tis diebus à prioribus Leonticis, 360.” This Reasoning from such undoubted Authorities, is so plain and convincing, that nothing farther need be added to it.

(16.) This Computation of 30 Days to every Month, and so of 360 Days to a Year, in ancient Time, is also confirm'd by that Length of a Month all along in the old Histories, as has in great measure been prov'd already, and is confirm'd by these farther Testimonies. When Queen *Esther* would express her Absence from King *Ahasuerus* for an entire Month, she expresses it thus;

Esth. iv. thus; *I have not been called to come in unto the*
 11. *King these 30 Days.* And when Darius's Cour-
 tiers, in Daniel, solicited him to prohibit Pray-
 ers for an entire Month likewise, they express'd
 Dan. vi. it thus; that none should ask a petition of any God
 12. or Man for 30 Days. And this Month of 30 Days
 did certainly continue in civil Use at Athens till
 Solon's Time at least. ^s Diogenes Laertius and
^a Plutarch agree, that he was the first who
 accommodated the Month to the Motion of the
 Moon, and called the last Day of it (which be-
 fore was named τετακὰς, the 30th Day) ἐνὴ καὶ νέα,
 the Old and New Day, as belonging partly to
 the Old Moon, and partly to the New. And
ⁱ Proclus also adds, that Solon was the first
 that made the Month less than 30 Days. Nay,
 even in later Years, above 200 Years after So-
 lon, the ancient Astronomers, Eutemon, Philip,
 and Calippus, in those very Cycles which they
 made for adjusting the Years and Months to
 the Motions of the Sun and Moon, did con-

^s Diog. Laert. i. 57. in vita Solonis. Πρῶτον δὲ Σόλων τὴν τετακὰς ἐνὴ καὶ νέαν ἐκάλεσεν.

^a Plutarch. in vita Solonis. Vitarum, pag. 92. Σωιδὼν δὲ [Solon] τὸ μῆδος τὴν ἀνωμαλίαν, ἣ δὲ κίνησιν τὴν σελεύης, ὅτε δυομήτρως τὴν ἡλίῳ πάντως, ὅτ' ἀνίχοντι συμφερονδύμῳ, ἀλλὰ πολ-
 λάκις τὴν αὐτῆς ἡμέρας καὶ καταλαμβανύσας καὶ παρερχομένη τὴν ἡλίῳ, αὐτὴν μὲν ἔταξε ταύτην, ἐνὴ καὶ νέαν καλεῖσθαι. τὸ μὲν παρὰ
 σωιδῶδε μέγεθος αὐτῆς τὴν δυομήτρως μῆτις, τὸ δὲ λοιπὸν ἤδη τὴν
 ἀρχομένην προσέκειν ἡγεμένη. Πρῶτον, ὡς εἴκειν, ὁρῶντας ἀ-
 καύσας Ὀμήρεα λέγοντι.

Τὴν μὲν φθινόγον μῆδος, τὴν δὲ ἰσαμήσιοι.

Τὴν δὲ ἐφεξῆς νημερίαν ἐκάλεσε. Τὴν δ' ἀπὸ εἰκάδου ἢ παρὰ
 θεῖς ἀλλ' ἀφαιρῶν καὶ ἀναλύων, ὥσπερ τα φῶτα τὴν σελήνης ἢ
 ἑώρα μέχρι τετακὰς ἡλείθησεν.

ⁱ Proclus in Timæum, lib. i. p. 25. lin. 43. ἔρ. Σόλων
 δὲ καὶ ὅτι ὁ μὲν ὁ σελευιακὸς ὅσον ἔστι τετακονδήμερος, καὶ ἀπὸ τῆς
 πρώτης αὐτὸς ἐνὴ ἐκάλεσε καὶ νέαν, καὶ ὅλως τὸ ἀσασεῖν τῆς
 αἰριθμῆς τῆς ἡμερῶν ἀπὸ εἰκάδου, εἰς ἐκείνου ἀναφέρει.

stantly

stantly allow 30 Days to each Month, and then threw out every 63^d or 64th Day, as is particularly explain'd in *Geminus*; who himself also expressly ^k asserts, that the Ancients constantly allowed 30 Days to a Month. Lastly, ¹ *Julius* ^{Cap. 6. ad calcem.} *Pollux*, ^m *Galen*, ⁿ *Cleomedes*, ^o *Orus Apollo*, ^a *Achilles Tattius*, and ^a *St. Austin*, do each of them assure us, that by a Month, in the vulgar way of speaking, is meant 30 Days. Nay, the four last express themselves so, as if the Lunar Month it self were exactly of that Length: And *St. Austin* carries the Matter farther, and takes the

^k *Gemin. cap. 6.* Οἱ μὲν ἂν ἀρχαῖοι τῆς μηνῆος τετρακονθημέρου ἦγον.

¹ *Jul. Pollux, lib. 1. Seg. 59.* Περὶ τῶν μηνῶν. Ἐκ τῶν μηνῶν ἐρεῖς σιτηρέσιον ἔμμηνον, καὶ μῆναιον, καὶ τετρακονθήμερον.

^m *Galen de Crisib. ii. 2.* Τὸν μῆνα τετρακονθήμερον εἶ λέγομεν.

ⁿ *Cleomed. ii. 4.* Καλεῖται δὲ [μῆν] καὶ τὸ ἀπὸ σωώδου ἐπὶ σωώδου, χρονικὸν ἀφίστημα καὶ λοιπὸν, ὃ τετρακονθήμερον χρονίζουσι. ὧς λέγομεν, μῆνα διποδεδημηκέναι, ἢ ἐπιδημῆναι, καὶ πάντως τὸ ἀπὸ σωώδου ἐπὶ σωώδου λέγουσι, ἀλλ' ἀπλῶς, τὸ τετρακονθήμερον ἀριθμῶν. *Idem, lib. 1. cap. 3.* *Lunam* ait σωωδοῦσιν τῇ ἡλίῳ ἀφ' ἧς ἡμερῶν.

^o *Orus Apollo, lib. 1. Hierogl. 4.* *Lunam* ait ἐν τῇ ἀπὸ κέρσεως τῇ ἀριθμῶν τετρακονθήμερῶν πληρωσάσαν, εἰς τὸ κάτω τοῖς κέρσεσι νοῦσιν.

^p *Achilles Tattius in Arati Phænomena, cap. 21.* *De Luna.* Πενήκονδεκαταῖα γὰρ εἰς πληρωθεῖσα ὃ εἰσιν ἡμῖσι μῆνός, δι-
 χαζομήνων καὶ ἡμερῶν.

^q *Augustin. de Trin. iv. 4.* Annus etiam unus, si duodecim menses integri considerentur, quos triceni dies complent, talem quippe mensem veteres observaverunt; quem circuitus Lunarís ostendit, senario numero pollet. Quod enim valent sex in primo ordine numerorum qui constat ex unis ut perveniatur ad decem; hoc valent sexaginta in secundo ordine, qui constat ex denis ut perveniatur ad centum. Sexagenarius verò numerus dierum sexta pars anni est. Proinde per senarium primi versus multiplicantur, tanquam senarius secundi versus, & fiunt sexies sexageni, qui sunt integri duodecim menses.

vide Not. f. p. 158. prius. Lunar Year, or 12 Lunar Months, to contain just 360 Days. And even ^r *Dionysius Exiguus*, above 500 Years after Christ, reproves many for this Error, of taking the Lunar Month to be just 30, and the Lunar Year just 360 Days. And it cannot be easily imagin'd, how so great an Error should so universally obtain, unless the most ancient Year and Month had been just 360 and 30 Days in Length respectively.

And thus, I think, I have clearly prov'd the first Particular which I undertook, namely, That the ancientest Year in Use in most Nations of the *Postdiluvian* World, was exactly 360 Days, and the Month exactly 30 Days. I come now to show, That even in the *Antediluvian* World, not only the Year in civil Use, but also the Solar Year, and the Lunar Year too, were each of them 360 Days in Length, and exactly commensurate to one another. And here, if the Reader will make Allowances for the Distance and Obscurity of the Times I am now about to treat of, and for the Scarcity of any Records belonging to them besides the Holy Scriptures; I believe he will find as much Evidence, even for this *second* Particular, as can reasonably be expected, and what is abundantly sufficient to satisfy him of the Truth and Reality of it.

And, (1.) since we have found, that the most ancient *Postdiluvian* Year in civil Use in most Countries, was exactly 360 Days, consist-

^r *Dionys. Exig. Epist. ad Petron.* Sed non hoc prætereundum esse putavimus, quod nimis errant, qui lunam peragere cursum sui circuli triginta dierum spatiis æstimantes, duodecim lunares menses in trecentis sexaginta diebus annumerant.

ing of 12 equal Months of 30 Days apiece; 'tis a strong Presumption, that the *Antediluvian* Civil Year was of the same Length. For it cannot easily be imagin'd, how this Year should so universally obtain *after* the Deluge, except it had been in Use *before* it; especially, since it is neither equal to the present *Solar* Year, nor to the *Lunar*. If the first Nations after the Deluge had made any Change in their Year, they would certainly have endeavour'd to make it conformable to the Motions, either of the Sun, or of the Moon, or both; which appears to be the Practice of every Nation, when they undertake to correct or alter the Year in civil Use. And therefore, since neither the Year of 360 Days, nor the Month of 30 Days, is agreeable to any of the Celestial Motions; it must be granted, that the *Postdiluvians* were not the first Framers of this Year, and therefore, that it was us'd *before* the Deluge also.

(2.) This farther appears by that most ancient and most valuable Testimony of *Moses*; whereby we understand, that from the 17th Day of the 2^d Month, when the Flood began, till the 17th Day of the 7th Month, when the Ark rested, were just 150 Days, or just 30 Days for every intervening Month. The Words are these: *In the 600th Year of Noah's Life; the second Month, the 17th Day of the Month, the* Gen. vii. 11.
same Day were all the Fountains of the great Deep broken up, and the windows of Heaven were open'd. — And the waters prevail'd upon the earth 24.
150 Days. — And after the end of 150 Days, the Chap. viii. 3, 4.
waters were abated: And the Ark rested in the 7th Month, on the 17th Day of the Month, upon the Mountains of Ararat. So that hence 'tis evident, that 5 Months, *viz.* the second, third,

fourth, fifth and sixth, had just 30 Days apiece; and, by Consequence, 'tis most probable, that all the rest had so likewise; and that therefore the whole Year had no more than 360 Days.

Lemma to the third Argument. The ancient Succession of Kings in Berofus and Abydenus, whose Reigns are counted by Sari, govern'd some Part of the Antediluvian World, and ended at the Deluge. All this is asserted by the Historians & themselves. Nay farther, Xisuthrus the last King, appears evidently to be the same with Noah, since almost the whole History of the Flood, and of Noah's being sav'd in the Ark, may be found in the remaining Fragments of Berofus and Abydenus, if you only change the Name of Xisuthrus for Noah. As particularly, that " God

- Gen. vi. 17. " reveal'd to *Xisuthrus*, that a great Deluge
& vii. 11. " should destroy Men from the Earth, and begin on the 15th Day of the Month *Desius*;
Chap. vi. 18, 19, " and therefore *Xisuthrus* was commanded to save
20, 21, " himself and his Family, by entering into an
22. & " Ark or Ship, and to take with him into the
Chap. vii. 1 " Ark all sorts of Birds and Beasts, with necessary Food for himself and them. Which
1—16. " being done, the Deluge came, as predicted.
Chap. viii. 1 " And after the Rain had ceased, *Xisuthrus* sent
1, 3, 7, 8, " out a Bird, to see if the Waters were abated;
9. " which return'd to him again, having found
x 10, 11. " nothing to rest upon. And after some Time,
" he sent out another; which return'd likewise,
" but with dirty Feet, whereby he knew the Wa-

^f Vide Berof. l. 2. citat. ab Alex. Polyhist. apud Syncel. p. 30, 31. Et Abyden. apud Euseb. Præpar. ix. 12. vel apud Syncel. p. 38, 39. Similia de Deucalione tradit Lucianus de Deâ Syriâ.

“ ters were abated. Lastly, he sent one out the [†] 12.
 “ third time, which return’d not to him again.
 “ That afterwards, *Xisuthrus* open’d the Ark, [†] 13.
 “ and saw the Ground was dry; so he and his
 “ Wife came out, and rais’d an Altar, and sa- [†] 18, 20.
 “ crific’d to the Gods. His Children also came
 “ out and sacrific’d, and found that the Ark rested [†] 4.
 “ on the *Gordyeen* Mountains in *Armenia*, and
 “ Part of it still continued in being when this
 “ Account was written. Afterwards, *Xisuthrus*’s ^{Chap. xi.}
 “ Children journey’d towards *Babylon*, built ma- ^{2, 3, 4. &c}
 “ ny Cities, and founded Temples, and particu- ^{x. 10, 11,}
 “ larly built *Babylon*.” These Circumstances ^{12.}
 are so agreeable to the Scripture-History of the
 Deluge, that many have been tempted to think
 that *Berosus* transcrib’d this Account from
 thence. But that cannot easily be; because
 amongst these Truths, there are some Mistakes
 and Falsities intermixt, which I thought it not
 worth the while to relate. But from those Fal-
 sities, and from the Idolatry in this History, it ap-
 pears, that it was collected and put into Writing
 some few Years after the Deluge, namely, after
 the Rise of Idolatry amongst the *Postdiluvians*.
 And yet, ’tis very probable, this was done long
 before the Lives of Men were fix’d to the present
 Standard, while some that had convers’d with
 the Sons or Grandsons of *Noah* were still alive;
 because the Particulars of the Deluge are more
 accurately related therein, as we have seen, than
 could be supposed possible, had the Tradition
 pass’d through very many Hands before it was
 committed to Writing.

(3.) That the *Antediluvian* Year was just 360
 Days long, appears from the Reigns of these
Antediluvian Kings, which, as I said, are not
 reckon’d by *Years*, but by *Sari*. And our Au-

*Vide Syn-
cel. p. 18.*

thors tell us, ' a *Sarus* is 3600 Years; that is, (as some ancient Christian ' Writers understood them, and as appears by the great Length of the particular Reigns, some of them amounting even to 18 *Sari* apiece) 3600 Days, or ten Years of 360 Days each. And the *Hebrew* or *Chaldee* Expression of a *Sarus* confirms this Assertion. *Hbasâr* is *Ten*; and the first Letter being such a Gut-tural as could not well be pronounced by the *Greeks*, they would naturally express the Word by Σάεϙ, which is therefore literally a *Decad*. For the Lives of the *Antediluvians* being generally at the least *Ten times* as long as ours, they found it more convenient to reckon their own Lives and the Reigns of their Kings, rather by *Decads* of Years, than by single *Years*. Now if a *Sarus*, or *Decad* of Years, contain'd 3600 Days before the Deluge; 'tis plain, that each Year contain'd just 360 Days.

(4.) If it be proved by the preceding Arguments, that the *Civil Year* before the Deluge was just 360 Days, and the *Civil Month* just 30 Days; 'twill be thence very probably concluded, that both the *Tropical Year*, and the *Lunar Month*, were each of the same Length respectively. The great Probability of this will appear, whether we suppose the *Civil Year* and *Month* to have been of *Human*, or of *Divine* Institution. For, 1st, if they were of *Human* Institution, what could induce the *Antediluvians* to make use of this Form of Year, if it varied

* Syncl. pag. 17. Ὁ μὲν Βήρωσϙ Δε Σάρων κ̅ Νήρων κ̅ Σώσων ἀνεγράφασθ' ὡν ὁ μὲν Σάεϙ τριχιλίων κ̅ ἑξακοσίων ἐτῶν χρόνον σημαίνει, ὁ δὲ Νήεϙ ἐτῶν ἑξακοσίων. ὁ δὲ Σῶσϙ ἐξήκοντα. Καὶ συνῆξε Σάερες ἑκατὸν εἴκοσι Δε βασιλείων δέκα. — Ταῦτα δὲ ἔτη τινὲς τῶν καθ' ἡμᾶς ἱστορικῶν, ἡμέτερος ἐλογίσαντο σοχατικῶς. Vide & Syncl. p. 32.

as much from the Motions both of the Sun and Moon, as it does at present? The *Antediluvian* Earth was extreamly fruitful, the Lives of its Inhabitants extreamly long, and the Air at that Time extreamly clear; so that the Inhabitants of the Old World wanted neither Leisure, nor Time, nor Opportunity, to make Multitudes of Observations, in order to discover the true Length of the Year and Month: which if they had discover'd, the great Conveniencies visibly consequent upon the Use of them, must needs have induced the Civil Powers to have enjoin'd and establish'd them accordingly. Now, since it appears by the former Arguments, that, in fact, the *Civil Year* before the Deluge was just 360 Days, and the *Civil Month* just 30 Days; 'twill be highly probable, from what is here alledg'd, that (if the same Civil Year and Month were of *Human* Discovery and Institution) the *Tropical Year* and *Lunar Month* were of the same Length also. But, 2dly, if, on the other hand, God himself reveal'd to Mankind the true Length of the Year; 'twill be still more evident, that the *Antediluvian* Tropical Year was exactly 360 Days long, and the Lunar Month exactly 30 Days: For God cannot deceive his Creatures; nor would he institute a Form of Year which was *less* convenient and proper for attaining the End for which it was instituted, when nothing hinder'd but that the *most* convenient and *most* proper, that is, the true Tropical Year and Lunar Month, might have been as easily ascertain'd by Divine Revelation, as any others. Since therefore 'tis before prov'd, that the Civil Year was just 360 Days before the Deluge, and the Civil Month just 30 Days; if God taught Mankind this Length of

the Year and Month; then it plainly appears, that the Tropical Year and Lunar Month were just 360 and 30 Days long respectively. And upon the whole, whether the *Antediluvian* Civil Year and Month were of *Divine* or of *Human* Original (and of one of the two they certainly were;) It appears either way highly probable, that both the Tropical and Lunar Year were just 360 Days each, and the Lunar Month exactly 30 Days.

(5.) And that the Primitive *Solar Year* was really no more than 360 Days, and contain'd just 12 *Lunar Months* of 30 Days apiece, appears farther, by the *most ancient Division* of the *Solar Course* into just 360 Degrees, and those distributed into 12 *Signs* of 30 Degrees apiece. For the only natural Reason that can be given, why the Zodiack or Solar Circle was at first divided either into just 360 Degrees, or 12 Signs, and why just 30 Degrees were allotted to each Sign, must be, that when this Division was made, the Sun ran through the Zodiack in just 360 Days, which were also 12 Lunar Months, 30 Days being then the exact Length of every Month. And this Division of the Zodiack or Solar Circle into 360 Degrees, was so very famous and remarkable in old Time, that Astronomers and all other Mathematicians have transferr'd that Number of Degrees to every other Circle which they consider'd; and have still suppos'd them divided, every one, great and small, into 360 Degrees. And this Division of a Circle has continued ever since to this Day, as a standing Memorial of that most ancient Tropical Year which obtain'd when this Division was made. I call'd this Division of the Zodiack a *most ancient* one, because it appears to have been made long before the earliest Accounts of Astronomy that we have; they all still supposing it, and not

at all mentioning any thing of its first Introduction. And since this Division was first made when the true Solar Year was no more than 360 Days in Length, and contain'd just 12 Lunar Months of 30 Days apiece; 'twas therefore older than the Deluge; since we are pretty certain that, generally speaking, since the Deluge, the Solar Year has been some Hours longer than 365 Days, and the Lunar Year some Hours shorter than 355. If then the Zodiack was thus divided *before* the Deluge, in Correspondence with the true Solar and Lunar Year; 'tis evident, that before the Deluge they were each of them just 360 Days, and subdivided into 12 Lunar Months of 30 Days apiece.

Lemma 1. to the sixth and seventh Arguments. Manetho's most ancient Succession of the Gods, as he calls them, reign'd before the Deluge, and ended at it. Manetho divides his Dynasties into those of the Gods, Demi-Gods, Heroes and Men. In this Place I only speak of the first of these, because none of the rest do contribute any thing to the present Argument. Now by Gods here, Manetho (as he^v elsewhere explains himself) means only mortal Men, who, for their Wisdom and Goodness, were severally promoted to the Regal Dignity, and afterwards made immortal. And ^w Diodorus

^v Manetho ap. Euseb. Præp. ii. 1. pag. 45. Τὰς δὲ θεὰς ἀνδρώπεις μὲν ὑπάρξαντες θνητοί, ἀπὸ δὲ ζωέσιν καὶ κοινῶν ἀνθρώπων ἐνεργείαν τυχεῖν τὴν ἀθανασίας, ὧν ὁνομαίετο καὶ βασιλεῖς θηέας.

^w Diod. Sicul. lib. i. p. 8. Περὶ μὲν ἔν τῷ ἐν ἑργασίᾳ θεῶν καὶ θηέσιν αἰδίοις ἐγκρίτοισιν, τοσαῦτα λέγουσιν Αἰγύπτιοι. Ἄλλως δὲ ἐν τούτῳ ἐπιγεῖας θηέας φασίν, ὑπάρξαντας μὲν θνητοί, ἀπὸ δὲ ζωέσιν καὶ κοινῶν ἀνθρώπων ἐνεργείαν, τετυχότας τὴν ἀθανασίας. ὧν ὁνομαίετο καὶ βασιλεῖς γεγονέναι καὶ τὴν Αἴγυπτον. Μετὰ τὴν ἐποικίαν τῶν αὐτῶν, τινὰς μὲν ὀνομαζόμενοι ὑπάρξαντες τοῖς ἑσθάνοις, τινὰς δὲ ἰδίαν ἐγκρίαν προσηγορίαν, Ἡλίον καὶ Κρόνον, &c.

Siculus also speaks to the same Purpose. But I shall not take upon me to defend every thing that *Manetho*, or any other Writer has advanc'd concerning these very ancient Times. 'Tis sufficient for my Purpose, if I prove that these Kings, whom *Manetho* calls *Gods*, reign'd over some Part of the *Antediluvian* World, and ended at the Deluge; their Memory being preserv'd by the old *Egyptian* Records, and their History committed to Writing * not many Years after the Dispersion from *Babel*. I shall therefore endeavour to prove this *Lemma*, *First*, by the Authority of several ancient Christian Chronographers at least, if not by the direct Assertion of *Manetho* himself: *Secondly*, from a Consideration of the *first* King; and, *Thirdly*, from a Consideration of the *last* King in the same Succession.

And, *First*, I am to shew, what Authority may be produc'd to prove that these Kings reign'd before the Deluge. I observe then, that both *Africanus* in the Third, and *Eusebius* in the Fourth Century of Christianity, having spoken of the former Sorts of *Manetho's* Dynasties, and of the *Gods* among the rest, do each of them prefix this Title to the following Dynasties of *Men*; [*Of the Egyptian Dynasties after the Deluge*:] which clearly intimates, that the preceding ones (and therefore also the *Gods*) were *before the Deluge*. And *Panodorus*, in the Beginning of the Fifth

Vide Syn- cel. p. 54. B. & 55. A.

Vide Syn- cel. p. 40, 41.

* For *Thoth*, the most ancient Egyptian Mercury, the same with *Athothes*, the second King of Egypt, who began to reign [by the Hebrew Chronology] within less than 200 Years after the Deluge, invented Letters: And from his Memoirs, *Manetho* compiled his History, or at least, that Part of it which relates to the *Gods*, &c. See Sir John Marsham's Canon Chronicus, Secul. 1. Tit. *Thoth Mercurius. Dii Cabiri.* And particularly observe what *Syncellus* says, p. 40. A. B.

Century, supposes both the *Gods* and *Demigods* to have reign'd before the Deluge. And *Georgius Syncellus*, tho' he rejects *Manetho's* Authority in this Particular; yet he every where allows and takes it for granted, that they were to be taken for *Antediluvian* Kings, and supposed to be so even by *Manetho* himself. And indeed, the Length of some of their Reigns is entirely disproportionate to any *Postdiluvian* Times; and when Allowance is made for *Manetho's* Way of reckoning, (which I shall presently explain) will be found very agreeable to the Longevity of the *Antediluvian* Patriarchs.

Secondly, The Succession of the Gods appears to have been before the Deluge; because *Vulcan*, the first King, was so. ^y *Tzetzes* says, he was contemporary with *Noah*, whom he supposes to be the same with *Osiris*; but by the same Argument he ought to have concluded, that the *Egyptian Vulcan* was long before *Noah*, since he was long before *Osiris*, as all will allow, and as it particularly appears from the very Succession of the Gods. And indeed, *Vulcan* seems to be no other than *Tubal-Cain* in Scripture. Their Names are near a-kin to each other: And the same Character belongs to both. The Scripture says, that *Tubal-Cain* was the *Instructor of every Artificer in Brass* ^{Gen. iv.} and *Iron*: And *Vulcan* is famous in prophane Authors, not only for his artificial working ^z in all

^y *Tzetz.* Chil. x. § 492, &c.

"Ἡρακλῆς τις Ἀργυπλῆς, ἐν ἑσίοις τοῖς Ἰ Νῶε,

"Ὁς Νῶε καὶ Διόνυσος καὶ Ὀσίρις καλεῖται,

Ἐφεύρε πυρ, καὶ τέχνας ὅ τ' ἐν πυρὶ, ὁπόσαι.

^z *Vid.* *Homer.* Il. Σ § 370, &c. Et *Virgil.* *Æn.* viii. § 400, &c. Apud *Homerum* *Vulcanus* appellatur χαλκιδεύς, κλυτοτέχνης, κλυτοεργός, &c. Apud *Orpheum* (*Hymn.* in *Vulcan.*) φωσφόρος, καελεόχης, τεχνοδίαυτος, ἐργαστής, &c.

forts of Metals, but also for his instructing ^a Mankind therein. And 'tis remarkable, that this is the more peculiar Character of this *Vulcan* here, in the ^b *Egyptian* Succession of the Gods, than of any other.

^a Homer. Hymn. in Vulcanum, ὕμν. 1, 2, 3.

Ἥφαιστον κλυτόμητον αἰεῖδ' ὅ, μῆσα λιγυῖα,
Ὅς μετ' Ἀθηναίης γλαυκῶπιδ' ὅ, ἀγλαὰ ἔργα
Ἀθρῶπυς ἐδίδαξεν ἐπὶ χροῶν,

Et Platonis Convivium, Operum, pag. 325. D. Καὶ Μῦσαι μουσικῆς [inventrices & διδάσκαλοι] καὶ Ἥφαιστος χαλκείας, καὶ Ἀθηνᾶ ἰσχυρίαι, καὶ Ζεὺς κυβερνήσις Θεῶν τε καὶ ἀνθρώπων.

Et ejusdem Politic. Operum, p. 177. A. [De temporibus aureum seculum proximè succedentibus verba faciens] Ὅθεν ἢ τὰ πάλαι λεχθέντα παρὰ Θεῶν δῶρα ἡμῖν δεδώρηται μετ' ἀναγκαίας διδασκῆς καὶ παιδούσιαις· πῦρ μὲν παρὰ Περσέως, τέχναι δὲ παρὰ Ἥφαιστου καὶ τῆς Σωτέρας. σπέρματα δὲ αὐτῇ καὶ φυτὰ παρὰ Ἀθηνᾶς καὶ πάντα ὅποια τῷ ἀνθρώπινον βίον κατεσκευάζειν, ἐν τῆσιν γένοιεν.

Et Diodorus Siculus, lib. 5. pag. 235. Ἥφαιστον δὲ λέγουσιν εὐρετὴν τῷ πατρὶ τὴν σιδήρεν ἔργασίας ἀπάτης, καὶ τῷ πατρὶ τὴν χαλκὸν καὶ χρυσὸν καὶ ἄργυρον, καὶ τῷ Ἀθηνᾶ ὅσα τὰ ἐν τῷ πυρὶ ἐργασίαν ἐπιδέχεται. Καὶ τὰς ἄλλας δὲ χρεῖας τῷ πυρὶ ἀπάτης προσεξέδωκεν, ὥστε παρὰ τοῖς τε ταῖς τέχνας ἐργαζομένοις, ὥστε τοῖς ἄλλοις ἀπασιν ἀνθρώποις. Διόπερ οἱ τε τῶν τεχνῶν τέτων δημιουργοὶ ταῖς εὐχαῖς καὶ θυσίαις τέττω τῷ Θεῷ μάλιστα ποιῶσι, ὥστε τὸ πῦρ εἶσι τε καὶ πάντες οἱ ἄνθρωποι προσαγορεύουσιν Ἥφαιστον, εἰς μνήμην καὶ τιμὴν ἀθάνατον τιθέμενοι τῷ ἐξ ἀρχῆς τῷ κοινῷ βίῳ δεδομένην εὐεργεσίαν.

^b Diodor. Sicul. lib. 1. pag. 8, 9. Ἕνιοι δὲ τῶν ἱερῶν φασὶν πρῶτον Ἥφαιστον βασιλεῦσαι, πῦρ εὐρετὴν γλυκόμην, καὶ Ἀθηνᾶν εὐχερσίαν ταύτῃ, τυχόντῃ τῆς ἡγεμονίας. Γενομένη γὰρ ἐν τοῖς ἔρεσι θεοῦ αὐτοῦ δένδρεα, καὶ τῷ πλοσίον ἑλκὸς καιομένης, προσελθόντῃ τῷ Ἥφαιστον καὶ τῷ χειμέριον ὄρεον, ἡσθῆναι ἀφ' ἐρῶντος ἐπὶ τῇ θεομασίᾳ· λήγοντι δὲ τῷ πυρὶ, αἰετὶ τῷ ὑλῆς ἐπιτελέειν. Καὶ τέττω τῷ τρόπῳ ἀφ' ἑρῶντος τὸ πῦρ, προσκαλεῖται τὰς ἄλλας ἀνθρώπους πρὸς τῷ ἐξ αὐτῆς γινόμενῃ εὐχερσίᾳ. Similia de aris & ferri inventione tradit Seneca, Epist. 90. In hoc quoque dissentio, sapientes fuisse, qui ferri metalla & aris invenerunt: cum incendio sylvarum adusta tellus, in summo venas jacentes liquefacta fudisset.

Et Chron. Alexandrin. pag. 106. Περὶ σιδῆρα τὸς πρῶτος ἐφείρεν. Ὁ δὲ αὐτὸς Ἥφαιστος [Ægyptiorum Rex] ἀπὸ μουσικῆς τῶν εὐχῶν τῷ ὀξυλάτῳ ἐδέξατο ἐν τῷ αἵματι, εἰς τὸ κατασκευάζειν ἐν σιδῆρι ὅπλα. Ὅθεν καὶ ἐπιφανῆς σιδῆρες ἡνέθη εἰς τὰς πολέμους. Ἀποθνήσκου ἐν αὐτὸν ὡς ——— τροφὴν ἀνθρώποις Ἀθηνᾶ

Thirdly,

Thirdly, The same Thing may be prov'd from some Considerations upon *Typhon*, the last King of this Succession; namely, that he reign'd immediately before the Deluge, and perish'd therein. This will clearly follow from what is before prov'd, if compar'd with the following *Lemma*. For if *Vulcan* be *Tubal-Cain*, this Succession must necessarily end at the Deluge; the Number of Years it contains not permitting us to suppose it could possibly end any considerable Time before it. But this will farther appear, *1st*, Because many Circumstances of the Deluge are mention'd in the History of *Osiris* and *Typhon*, in *Plutarch* and others; as particularly the very Day when the Deluge began, or when *Osiris*, (who is taken for *Noah*) was shut up in the Ark, viz. the 17th Day of the 2^d Month after the Autumnal Equinox, as has been observ'd before. And other Circumstances of the Deluge there are in *Typhon's* History, some of which I shall have occasion to mention presently, and others will be produc'd under the following *Hypothesis*. *2dly*, The very Name of *Typhon* also, according to some learned Men, signifies a *Deluge* or *Inundation*; whence the *Egyptian* Priests (as *Plutarch* says) called the

Not. y;
pag. 170.
p. 170.
Arg. 7.
Hypoth.
vi. prius.
Arg. 7.
infra.
P. 185.
&c. infra,

κατασκόψης ὅπλων εὐρηκότα, καὶ ἐν τοῖς πολέμοις δυνάμει καὶ σωτηρίαν ποιήσαντα. Πρὸ γὰρ αὐτῷ, ῥοπαλοῖς καὶ λίθοις ἐπολέμει. Similia de Vulcano Ægyptiorum Rege, de ἰξυλάβῃ seu forcipe, & de ferri inventione & usu, reperiuntur apud Cedrenum, p. 19. D. & apud Suid. voce Ἡραῖος. Vide etiam Not. y, p. 171. prius.

^c See Jurieu's *Doctrines and Worship of the Church*. Part iii. Treatise iv. [Of the Golden Calf.] chap. viii. Vol. ii. p. 208.

^d Plutarch de Iside & Osiride, Operum Moral. p. 363. Ὡς αὖτε Ἕλληες Κρόνον ἀλληγοροῦσι τὸ χροῖον, Ἡραν δὲ τὸ ἄερα, γένεσιν δὲ Ἡραῖς, τὸ εἰς πῦρ αἶρα μεταβολήν· ἔτω παρ' Ἀγυπτίου Νείλον ἐπὶ τὸ Ὀσίριον, Ἰσιδι σωόντα τῇ γῇ. Τυφῶνα δὲ τὸ θάλασσαν, εἰς ἣν ὁ Νεῖλος ἐμπέπων ἀφανίζει καὶ ἀφαιρᾷ.

Sea Typhon. 3dly, Typhon (whom the *Latin Poets* more frequently call *Typhoeus*) is^c represented as a monstrous Giant who fought against Heaven, and was at last overcome by Jupiter, and, as one says, *lies now submers'd in Water*. From all which it appears very probable, that he was one of those
 Gen. vi. 4. *Giants* who, as the Scripture says, *were in the Earth before the Flood*; one of those mighty Men
 & 5, 6, 7, *which were of old, Men of Renown*, whose Wicked-
 11, 12, 13. *ness* was so exceeding great, as might easily give Occasion to the ancient Tradition of their fighting against God. And lastly, Typhon's being said to be overcome and submers'd in Water, seems evidently to proceed from his perishing in the Deluge, which was brought upon the Earth by the great Wickedness wherein^e He, and indeed all the *Antediluvian World* had involv'd themselves. So that upon the whole, it cannot easily be denied that this Succession of the *Gods* ended at the Deluge, and that Typhon, the last King of it, perish'd therein. [See another Notion of Typhon, in the III^d Appendix to the *Essay for Restoring the True Text of the Old Testament*.]

Lemma 2. to the 6th and 7th Arguments. *The Reigns of the Gods in Manetho, are not express'd by*

^c Vid. Æschyl. in Prometh. vinc̄to, & 351—365. Et Apollodori Bibliothec. lib. 1. cap. 6. § 3. Et Antonini Liberalis, c. 28. Et Diodor. Sicul. 1. 1. p. 16. A. B. Et alios passim.

^f Apollonii Argonaut. lib. 2. & 1215, &c.

Ἐνθα Τυφώονα Φασὶ Διὸς Κρονίδαο κεραυνῷ
 Βλήθμεν, ὅππότε οἱ τιταράς ἐπορέξατο χεῖρας,
 Θεμὸν δ' αὖτε κρατὸς εἶξαι φόνον, ἵκετο δ' αὖτως
 Οὐρεα καὶ πεδίον Νυκτοῖον, ἔθ' ἔτι νῦν περ
 Κεῖν ὑποβρύχιον Σερβωνίδῃ ὕδασι λίμνης.

^e Diodor. Sicul. lib. 1. pag. 12. Φασὶ — νημίμως βασι-
 λείοντα τ' Αἰγύπτῃ τ' Ὀστρεν, ὑπὸ Τυφῶνι ἀναστειθῶας τ'
 ἀδελφεῖς, βιαίῃς καὶ ἀσεβείῃς ὄντες. Vide etiam Euseb. Præp. ii. 1.
 p. 46. D. Et confer Gen. vi. 11, 13.

Years,

Years, but partly by Lunar Months, and partly by ὥραι, or Seasons. The Probability of this Lemma ^h Diodorus assures us of; that when 'tis said that some of the first Kings of the Succession of the Gods reign'd about 1200 Years, so many *Lunar Months* are understood thereby: And when 'tis said that the latter Kings of the same Succession reign'd 300 Years or more, there *the Seasons of the Year* are understood, reckoning 4 Months in every Season, and 3 Seasons in every Year, namely, Spring, Summer and Winter. And these two sorts of *Egyptian Computations* for Years are also observ'd by ⁱ *Plutarch*. And particularly as to the former, ^k *Varro*,

^h Diodor. Sicul. lib. i. p. 15, 16. Μυθολογῆσι δ' [Ἀιγυπίοις] καὶ τῇ Θείῳ τὰς μὲν ἀρχαιοτάτας βασιλεύσαι πλείω τῶν χιλίων καὶ Ἀφροδισίων ἐτῶν, τὰς δὲ μεταχρονότους ἐκ ἐλάττω τῇ τετρακισίων· ἀπίσθη δ' ὅληθ' ὅτι πολλὰς τῶν ἐτῶν, ἐπιχειρῶσι τινὲς λέγειν, ὅτι τὸ παλαιόν, ἔγωγε δὲ πάλιν τὸ ἥλιον κινήσεως ἐπεγνωσμένης, συνέβαινε καὶ τῇ τῇ σελήνῃς πορείᾳ ἀγνοεῖται τὴν ἐνιαυτὸν. Διότι τῶν ἐτῶν τετρακονθήμερον ὄντων, ὅτε ἀδωάτων ἐξ βεβιωκέναι τινὰς ἔτη χίλια καὶ Ἀφροδισία· καὶ γὰρ νῦν, δυοκαίδεκα μιλίων ὄντων τῶν ἐνιαυτῶν, ὅτε ὀλίγες ὑπὲρ ἑκατὸν ἔτη ζῇν. Παρεμπλίσια δὲ λέγουσι καὶ πάλιν τῇ τετρακισία ἔτη δοκῶντων ἀρῆσαι. Κατ' ἐκείνας γὰρ τὰς χρόνους, τὴν ἐνιαυτὸν ἀπαρτίξεαι τέσσαρσι μηνὶ, τοῖς ἡμετέροις καὶ τὰς τῶν χρόνων ὥρας, οἷον ἑαρόν, θέρος, χειμῶν. Ἀρ' ἥς αἰτίας καὶ παρ' ἐνὶ ταῖς ἑλληνικαῖς τὰς ἐνιαυτοῦ ὥρας καλεῖται, καὶ τὰς κατ' ἐτὶ ἀναγραφὰς ὡρογραφίας παραπορεύεται.

ⁱ Plutarch. in Numa. Vitarum, p. 72. Αἰγυπίοις δὲ μιλίων ἦν ὁ ἐνιαυτός, εἴτα τετρακισίων, ὡς φασι. Διὸ καὶ νεωτάτῳ χρόνῳ οἰκῶντες, ἀρχαιοτάτοι δοκῶσιν ἐξ, καὶ πολλὰ ἀμύχανον ἐτῶν ἐπὶ ταῖς ἡμετέροις καταφέρουσιν, αἵτι δὲ τὰς μῆνας εἰς ἐτῶν ἀριθμὸν τιθέμενοι.

^k Lactan. Institut. ii. 12. [Speaking of Mankind immediately after the Fall.] Sic facta hominis vita est temporaria, sed tamen longa, quæ in mille annos propagaretur. Quod, divinis Literis proditum, & per omnium scientiam publicatum, cum Varro non ignoret, argumentari nixus est, cur putarentur antiqui mille annos victitasse. Ait enim, apud Ægyptios pro annis menses haberi, ut non Solis per 12 signa circuitus faciat annum, sed Luna, quæ orbem illum signiferum 30 dierum spatio illustrat, &c.

Pliny,

¹ Pliny, ^m Macrobius, and ⁿ Suidas, do all agree, that the *Egyptians* of old computed a Lunar Month for a Year. And ^o *Julius Africanus* speaks also of several that computed the Reigns of the most ancient Kings of *Egypt* upon this *Hypothesis*. And ^p *Eusebius* also asserts, that this Method of reckoning a Month for a Year, was practis'd by the most ancient *Egyptians*. Add, that ^q *Eudoxus* also asserts, that the *Egyptians* formerly us'd a Month for a Year. And some ancient Christian Chronographers were so fully persuaded of this, that they have extended it too far, and suppos'd, that all the Reigns of the *Gods* in *Manetho* were reckon'd by Months only; and on that Supposition, have reduc'd them to Tropical

*vide Syn-
cel. p. 19.*

¹ *Plin. Nat. Hist. vii. 48.* Annum enim alii æstate unum determinabant, & alterum hieme: alii quadripartitis temporibus, sicut Arcades, quorum anni trimestres fuere: quidam Lunæ senio, ut Ægyptii: itaque apud eos aliqui & singula millia annorum vixisse produntur. *This Passage is quoted by St. Austin, de Civit. Dei, xv. 12. where for [Lunæ senio] he reads [Lunæ fine.]*

^m *Macrob. Saturnal. i. 14.* [Apud Ægyptios] Lunaris annus mensis est, quia Luna paulo minus quam mensem in Zodiaci circuituione consumit.

ⁿ *Suid. in Ἡλιοῦ, de regno Solis, Vulcani Fil. verba faciens,* Ὅι μὲν γὰρ τὰς ἡμέρας ἐνιαυτὸς ἐψήφισεν· οἱ δὲ τὰς τοιαύτας τὴν σελλώης· ἑτέρωι δὲ τῆς δ' καιρῆς.

^o *African. apud Syncel. p. 17.* Ἀγύπιοι μὲν οὖν ———— πρὸς τὰς τοιαύτας καὶ μυριάδας ἐτῶν, κατέθεσαν τινα τῶν παρ' αὐτοῖς ἀστρολογημάτων ἐξείναι· ἃς τινες τῶν ταῦτα ἀπερθεῖν δοξάντων συσέλλοντες, σελλωαῖας εἶπον ἐνιαυτῆς, &c.

^p *Euseb. apud Syncel. p. 40.* Ἀγύπιοι δὲ Θεῶν καὶ Ἡμιθέων, καὶ ὧν τούτοις νεκρῶν καὶ θνητῶν ἐτέρων βασιλέων, πολλὰ καὶ φλύαρον συνείρκει μυθολογίαν. Ὅι γὰρ παρ' αὐτοῖς παλαιότατοι σελλωαῖας ἔφασκον εἶναι, ἥγε μλωαῖας τῆς ἐνιαυτῆς, ἐξ ἡμερῶν τετρακοπλῆ σωεσώτας.

^q *Proclus in Timæum, lib. i. pag. 31. lin. 50. etc.* Εἰ δὲ καὶ ὁ φησὶν Εὐδόξῳ ἀληθὲς, ὅτι Ἀγύπιοι τὴν μλωα ἐνιαυτὸν ἐκάλεον, ὅτι ἂν ἡ τῶν πολλῶν τούτων ἐνιαυτῶν ἀπαθείμησης ἔχοι τὴν διαιμασίαν.

or *Julian Years*: Whereas it appears from *Diodorus*, that only the long Reigns of the *first* Kings are to be computed by Lunar Months, and those of the rest by Seasons of four Months apiece, or the third Part of a Year. And this Computation of four Months for a Year, is not only attested by *Diodorus* and *Plutarch* as before, but also by ^r *Censorinus*, ^r *Solinus*, and ^r *St. Austin*, who each of 'em affirm, that the *Egyptians* of old used this way of reckoning. [But see the *Essay on the Old Testament*.]

(6.) That before the Deluge, the *Lunar Year* at least, of 12 Lunar Months, and very probably the *Solar Year* too, was just 360 Days, and each Month just 30 Days, will appear from some Reigns in this *Antediluvian* Dynasty of the *Gods*. This I shall prove by showing first, that the Lunar Year was then exactly 12 Lunar Months, or 12 Synodical Revolutions of the Moon, without any Embolimary Month: *Secondly*, That the Tropical Solar Year contain'd 12 Months also; and *Thirdly*, That each Lunar Month contain'd exactly 30 Days. And *First*, The Lunar Year was exactly 12 Lunar Months long. For *Vulcan* in ^r *Manetho* is

^r *Censorin.* c. 19. Et in Ægypto quidem antiquissimum ferunt annum bimestrem fuisse; post deinde ab Ibone Rege quadrimestrem factum: novissime Arminon ad tredecim [lege duodecim] menses & dies quinque perduxisse.

^r *Solin.* Polyhist. c. 3. [Annus] apud Ægyptios quatuor mensibus terminabatur. Quoted also (but without naming the Author) by *St. Austin*, de Civ. Dei, xv. 12.

^r *Augustin.* de Civit. Dei, xii. 10. Perhibentur enim Ægyptii quondam tam breves annos habuisse, ut quaternis mensibus finirentur. Unde annus plenior & verior, qualis nunc & nobis & illis est, tres eorum annos complectebatur antiquos.

^r *Syncl.* p. 18. πρῶτον, φησὶν [Manetho] θεὸς Ἡφαιστος ἔτη ἐνακτιχίλια ἐβασίλευσεν. Ταῦτα τὰ ἐνακτιχίλια ἔτη πάλιν τινὲς τῶν καθ' ἡμᾶς ἱστορικῶν, ἀντὶ μύλων λογισάμενοι καὶ μερίσαν-

Lem: 2. to have prov'd, 9000 Revolutions of the Moon,
 this and the which make up 750 Years of 12 Months each,
 next Argu- or if you please, 75 Sari. From whence it ap-
 ment. pears, that each Year had in it 12 Lunar Months
 exactly; no Embolimary Month being taken in
 for 750 Years together. 2dly, The Tropical Year
 contain'd 12 Months also; as appears from the
 Years of the latter Kings of this same Succession
 of the Gods, which are said to be each of the three
 Seasons of the Year, viz. Spring, Summer and
 Winter, each containing four Months. From
 whence it follows, that the Tropical Year (for
 'tis a Year determin'd by the Seasons) was exact-
 ly 12 Months also: Which Months must in all
 reason be suppos'd to be of the same sort with
 those which were before spoken of, namely, Lu-
 nar Months. So that 'tis highly probable, the
 Tropical Year at that Time was just 12 Lunar
 Months in Length. 3dly, Each Month at the
 same Time contain'd exactly 30 Days. This is
 attested by many ancient Authors. Thus Varro,
 speaking of these large Numbers in the Records
 of ancient Time, says, the Egyptians therein do
 reckon Lunar Months for Years, and allow thirty
 Days to the Time in which the Moon finishes
 its menstrual Course. And Diodorus Siculus,
 speaking of those who reckon'd the Reigns of
 the Gods in Egypt by Lunar Months, expressly
 asserts, that they computed 30 Days to a Month.
 And in like manner, when Eusebius (speaking
 also of the long Reigns in the Egyptian Succes-
 sion.

Vide Not.
 k, p. 175.
 prius.

Vide Not.
 h, p. 175.
 prius.

Vide Not.
 p. d. 176.
 prius.

τις τὸ ἑ ἡμερῶν πλῆθος ἑ αὐτῶν ἐννακχιλίων σελήναιων ὡς
 τὰς τετρακισίας. ἐξήκοντα πάντες ἡμέρας ἑ αὐτῶν, συνῆξαν ἔτη
 ἑπτακόσια εἴκοσι ἐπὶ τὰς ἑ ἡμῖν, καὶ τέσσαρας ἡμέρας. [Hic quæ-
 dam correxere Joseph. Scaliger & Jac. Goar.]

sion

sion of the *Gods*) says, that the most ancient *Egyptians* reckon'd by Lunar Months instead of Years; he adds in the same Place, that those Lunar Months consisted of thirty Days apiece. And * *Panodorus* seems to intimate, that before the Deluge, not only the *Civil*, but also the *Lunar* Month was exactly 30 Days; and that the Reigns of the *Gods* in *Manetho* were computed by Lunar Months of thirty Days apiece. To these Testimonies I need not add St. *Austin* vide Not. f, p. 158. Et Not. p. 161. prius. Et Argult. partis primæ, p. 161, 162. here, as having already produc'd what he has spoken on this Subject. Since then it appears by the *first* Part of this Argument, that, during the *Antediluvian* Succession, there were exactly 12 Lunar Revolutions in the Year; and since it appears by the *second* Part, that there were exactly twelve (and those very probably *Lunar*) Months in the *Tropical* Year also; and since it appears by the *third* Part, that there were just 30 Days in each Lunar Revolution at the same Time: 'Tis evident from all three taken together, that before the Deluge, the Lunar Year at least, and very probably the *Solar* also, consisted exactly of 12 Lunar Months of 30 Days apiece, or of 360 Days in the whole.

(7.) That not only the *Civil*, but also the *Tropical* Year of the Sun, and the *Lunar* Year of 12 Synodical Lunar Months too, were each of

* *Panodorus* apud Syncel. p. 41. ait Egregoros Solarem periodum & Lunarem hominibus ostendisse: Οἱ ἡ ἀποστέφαντες εἰς τὸ παλαιότερον, μικροτέρων, ἢ εὐδηλοτέρων, τετακτομένην σελήνιακὸν κύκλον ἐβίβησαν εἰς ἐνιαυτὸν ἀεὶ θημεῖον 24, τὸ ἢ ἡλίου κύκλου ἐν τοῖς αὐτοῖς δώδεκα ζωδίοις πληρεῖας ἐν ἰσαερίμοις μόρις τῷ. Ὅθεν σωθεῖν τὰς βασιλείας τῶ παρ' αὐτοῖς βασιλέως ἀντὶ Θεῶν ἡμεῖς ἐξ ἐν δυναστείας ἐξ, κατ' ἔτη ἐν σελήνιακῷς τετακτομένης κύκλοις παρ' αὐτοῖς ἀεὶ θημεῖον αὐτῶν σωθεῖσαν σελήνια Μαθητὴν ἔτη, ἡλιακὰ 24.

them 360 Days, and exactly equal to each other before the Deluge, is farther attested by a famous Piece of ancient Mythology preserv'd in *Plutarch*, which I have had Occasion to mention before: That about the Times of *Osiris* and *Typhon*, that is, about the Deluge, there happen'd such an Alteration both in the Month and the Year, that the *Moon* lost a 70th Part of each Day, and the *Sun* gain'd it; whereby the *Lunar* Year became above 5 Days shorter, and the *Solar* Year above 5 Days longer than each of them were before. Wherefore, since the *Solar* Year is now somewhat more than 365 Days, and the *Lunar* Year somewhat less than 355 Days; 'tis most evident, that before this Change, both the *Solar* and the *Lunar* Year were just 360 Days, and exactly equal to each other: Nay more, 'tis evident also, that the Change made in the Solar and Lunar Revolutions, from their Original to their present State and Periods, happen'd at the Deluge.

(8.) All this will be abundantly confirm'd, if a Natural, Easy, and Philosophical Account can be given of this Change of the Solar and Lunar Revolutions at the Deluge. I say, if the same Cause, which alone appears sufficient to drown the World, and to solve all the numerous *Phænomena* relating to the Deluge, will also necessarily produce the aforesaid Changes in the Solar and Lunar Revolutions; then I think this Proposition will have all the Evidence for it, that any one can desire. And that all this may be effected by the Approach of a Comet to the Earth, will, I believe, appear fully to the Satisfaction of those who shall carefully read and digest the present Theory, or even the following *Hypothesis*, only; to which therefore the Reader is referr'd.

Upon

Upon the whole, since the Year of 360 Days, and the Month of 30 Days, appear to have been originally in use in so many Parts of the *Postdiluvian* World; since all the Accounts of the *Antediluvian* World that are extant, namely, that of the Holy Scriptures, and those of the *Chaldeans* and *Egyptians*, do each of them respectively give Evidence for the *Civil* Use of this Year and Month before the Deluge; since some of them go farther still, and prove that the *Tropical Solar* Year, and *Lunar* Month, were then of the same Length respectively: If, *lastly*, the natural and necessary *Cause* of these remarkable Changes in the Solar and Lunar Year at the Deluge, is in the following *Hypothesis* effectually prov'd, not only from Historical Evidence, but also from Natural Philosophy and the present State of the World; I cannot well perceive, how this Proposition comes short of Physical Demonstration: But this I am sure of, that it has a much greater Degree of Evidence than most Propositions of this Nature can pretend to.

Coroll. *Since therefore we have such abundant Evidence, that the Civil Year in so many Places, both before the Deluge, and for many Ages after it; and that even the Tropical and Lunar Year before the Deluge, were respectively, just 360 Days in Length; 'tis very probable, that the ancient Kings who reign'd in any Age and Nation where this Year was in Civil Use, computed the Years of their Reigns by this Standard of 360 Days to a Year. It may therefore very well deserve our Enquiry, whether several Difficulties in the ancient Postdiluvian Chronology may not sometimes be taken away, by substituting this Primitive Year of 360 Days, instead of the Julian or Tropical Year, now commonly made use of by Chronologers. I say, sometimes;*

for it may happen, that the Years propos'd might formerly have been reduc'd by ancient Authors, from the Primitive Form to the Tropical or Nabonassarean, or Julian Form: Or 'tis possible that the Primitive Year might sometimes have been in Civil Use as to some Instances only, and yet at the same Time, the Tropical, Nabonassarean, or some other Form of Year might have been made use of in the given Instance. But otherwise, the Use of the Julian Year (without a previous Reduction) in those Instances where the Primitive Year is meant, must certainly breed much Confusion in Chronological Computations, since 487 Primitive Years are no more than 480 Julian ones.

XI. A Comet, cutting the Plane of the Ecciptick, in its Descent towards its *Perihelion*; on the first Day of the Deluge, pass'd before the Body of our Earth.

Lem. 45.
&c. *prins.*

That such a Position of a Comet's Orbit, and such a Passage by as is here suppos'd, are in themselves possible, and agreeable to the *Phænomena* of Nature, all competent Judges, who are acquainted with the new and wonderful Discoveries in Astronomy, according to the *Lemmata* hereto relating, must freely grant. But that it really did so at the Time here specified, is what I am now to prove. 'Tis true, when upon a mere Supposition of such a Passing by of a Comet, I had in my own Mind observ'd the *Phænomena* relating to the Deluge to answer to Admiration, I was not a little surpriz'd, and pleas'd at such a Discovery. It gave me no small Satisfaction to see, that, upon a possible and easy *Hypothesis*, I could give so clear an Account of those Things,

which

which had hitherto prov'd so hard, not to say inexplicable; and could show the exact Coincidence of the Particulars with the sacred History, and the *Phænomena* of Nature. I thought to be able to proceed so far, was not only more than had been yet done, more than was generally expected ever would be done; but abundantly sufficient to the best of Purposes, to clear the Holy Scriptures, from the Imputations of ill-disposed Men, and to demonstrate the Account of the Deluge to be in every Part neither impossible nor unphilosophical. But proceeding in some farther Thoughts and Calculations on the said *Hypothesis*, to my exceeding great Content and Admiration, I found all Things to correspond so strangely, and the Time of the Year by several concurring ways to be so exactly fix'd, agreeably to the sacred History thereby; that, as I saw abundant Reason my self to rest satisfied of the Reality, as well as Probability of what I before barely suppos'd; so I thought the producing the Particulars I had discover'd, might afford Evidence to the Minds of others, and go a great way to the entire Establishing the Certainty of that, of whose great Probability the Correspondence of the several *Phænomena* of the Deluge had before afforded sufficient Satisfaction. But before I come to the Arguments to be here made use of themselves, give me leave, by way of Preparation, to shew what sort of Evidence such Assertions as this before us, when good and valid, are capable of; and how great or satisfactory it may be in any other, and so may be expected to be in the present Case.

'Tis evident, that all Truths are not capable of the same Degree of Evidence, or Manner of Probation. First Notions are known by

Lib. iv.
c. 10.

Intuition, or so quick and clear a Perception, that we scarce observe any Deduction or Ratiocination at all in our Assent to them. Some principal Metaphysical Truths have so near a Connexion with these, that the Manner of reasoning or inferring is scarce to be trac'd or describ'd; a few obvious and quick Reflections enforcing our hearty Acquiescence: Among which, the best of Metaphysicians, Mr. *Lock*, in his *Essay of Human Understanding*, very rightly places the Being of God. Purely Mathematical Propositions are demonstrated by a Chain of Deductions, each of which is certain and unquestionable. So that on a clear View of the Truth and Connexion of each Link, or Member of the entire Argumentation, the Evidence may still be look'd on as infallible. Propositions in mix'd Mathematicks, as in Opticks, Geography, and Astronomy, depending partly on abstract Mathematick Demonstrations, and partly on the Observations of the *Phænomena* of Nature; tho' not arriving to the strict Infallibility of the Evidence with the former sort, are yet justly in most Cases allow'd to be truly certain and indubitable. History is all that we commonly can have for Matters of Fact past and gone; and where 'tis agreed upon by all, and uncontroulable, 'tis esteem'd fully satisfactory, tho' not absolutely certain, in common Cases. And, Lastly, to come closer to the Point, the Knowledge of Causes is deduc'd from their Effects. Thus all Natural Philosophy, *i. e.* the Knowledge of the Causes of the several visible *Phænomena* of the World, is solely deriv'd from those Effects, or *Phænomena* themselves, their accurate Correspondence to, and necessary Dependance on certain supposed Causes, and their Insolubility on any other Hy-

potheses,

pothefes, with the Coincidence of the particular Calculations of the Quantities of Motion, Velocity, Periods, and *Species* of Figures to be every where accounted for. On the universal Conspiration and Correspondence of which, with the Impossibility of producing an Instance to the contrary, depends what may be truly styl'd a *Physical Demonstration*. I mean, then, and only then, is a *Physical Cause* to be esteem'd *Demonstrated*, when all the *Phænomena* of the World may be certainly shewn to be just so, and no otherwise, as they necessarily would, and must be on Supposition thereof. This last Method is that which our best of Philosophers, Sir *Isaac Newton*, has taken in his Demonstration of the universal Affection or Property of Bodies, which he calls *Mutual Attraction* or *Gravitation*, and which accordingly he has establish'd beyond Possibility of Contradiction; and this is the sole way of bringing Natural Knowledge to Perfection, and extricating it from the little *Hypotheses*, which, in Defect of true Science, the World has till lately been forc'd to be contented with.

In the Point before us, there are only three possible Ways of proving the Truth of the Assertion here laid down. The *first*, that of Propositions in mix'd Mathematicks, by Calculation of the Motion of some Comet, as we do of Planets from the Astronomical Tables, and thence demonstrating the Certainty thereof: Which tho' I was destitute of in my two former Editions, yet have I now obtain'd, from later Observations: Which most convincing Evidence I shall at large give the inquisitive Reader in the very Words of that particular Dissertation which I have formerly publish'd under the Title of, *The Cause of the Deluge demonstrated*, a little corrected as follows.

The

The Cause of the Deluge demonstrated.

Before I proceed to my present *Demonstration of the Cause of the Deluge*, I must premise this; That in my *New Theory of the Earth*, especially as improv'd and corrected in the Second Edition, I have evidently shewn, that in case a Comet pass'd by, before the Earth, in its annual Course, on the 17th Day of the second Month, from the Autumnal Equinox, or *November 28*, in the 2349th Year before the Christian *Æra*, the *Phænomena* of Nature and History, and particularly the *Mosaick* Account of the Deluge of *Noah*, which are no otherwise to be accounted for, are exactly explain'd; that the Calculations and Proportions, where-ever we can come at them, are on that Hypothesis right, agreeable to one another, to ancient, especially sacred History, and to the System of Astronomy; that there are Traces in ancient Books of a Tradition, that a Comet did appear at the very Beginning of the Deluge; that the very Month and Day mention'd by *Moses* for such its Beginning, is attested to by other old Records, and, on this Hypothesis, by Astronomical Calculations also: Whence I concluded, that it was most highly probable, or rather physically demonstrable, that a Comet did pass by at that Time; and was, under the Conduct of the Divine Providence, and as his Instrument in punishing a wicked World, the Cause of the Deluge. The only Thing wanting, was, to demonstrate from the Period of some Comet, and its Situation in the Heavens, Astronomically stated and computed, that such a Comet did actually come by at that very Time: Which if it could be once shown, the whole must be own'd as certain, and demonstrated, and all the natural Corollaries there-
from

from must be allow'd as true, even by the Obstinate and Incredulous. This indeed, at first, was look'd upon by me as not at all to be expected; since we then barely began to know, or rather strongly to conjecture, that Comets did revolve about the Sun in settled Periods, but without being able to determine any one of those Periods. But of late God has so bless'd the Labours of the Learned; and this Part of Astronomy is so much improv'd, especially by the farther Pains and Observations of the great Inventor himself, Sir *Isaac Newton*; whose Name will never be forgotten, while Mathematicks and Astronomy are preserv'd among Mankind; and by the laborious Calculations of the acute Dr. *Halley*, on the Principles laid down by the former; that what was a few Years ago almost despair'd of, is now in great measure discover'd, and we know, not only that one Comet has come round three or four times already in later Ages, viz. *A. D.* 1456, 1531, 1607, and 1682, and will no doubt come round again *A. D.* 1758, as making its Period in about 75 Years; that another has probably come round in the same latter Ages twice already, viz. *A. D.* 1532, and 1661; and so is to return *A. D.* 1789, or 1790, as making its Period in about 129 Years: But, which is the greatest Discovery of all, that the last most remarkable Comet, whose Descent into our Regions has occasion'd almost all the modern solid Knowledge we have relating to the whole Cometick System it self, has also several times been seen already, within the Time of certain Records; I mean, in the 44th Year before Christ, and again, *A. D.* 531, or 532; and yet again *A. D.* 1106, besides this its last Appearance

ance *A. D.* 1680; whereby we know that it revolves in about 575 Years. This last Comet I may well call the *most remarkable one* that ever appear'd; since besides the former Consideration, I shall presently shew, that it is no other than that very Comet which came by the Earth at the Beginning of *Noah's Deluge*, and which was the Cause of the same. Now considering the Premises, I shall only have occasion, in order to my present Design, to prove these five Things concerning it. (1.) That no other of the known Comets could pass by the Earth at the Beginning of the Deluge. (2.) That this Comet was of the same Bigness with that which pass'd by at that Time. (3.) That its Orbit was then in a due Position to pass by at that Time. (4.) That its descending Node was then also in a due Position for the same Passage by. (5.) That its Period exactly agrees to the same Time. Or, in short, that all the known Circumstances of this Comet do correspond, and that it actually pass'd by on or about that very Year, and on or about that very Day of the Year when the Deluge began. All which Things I shall demonstrate in their Order.

I. None of the other Comets yet known, I mean of the 21 in Dr. *Halley's Table* and my *Solar System*, could be that which pass'd by the Earth at the Beginning of the Deluge. This appears by these certain Arguments following.

New Theor. (1.) None of them appear to have been of a
2^d Edit. due Bigness: For the *Phænomena* of the Deluge,
Coroll. 2. as I have elsewhere shew'd, require a small one
Lem. 86. in Comparison of the Earth; whereas the rest of
& p. 203, the Comets seem to have been commonly larger
204. than it.

(2.) None

(2.) None of their descending Orbits are duly situate, I mean between 90 and 100 Degrees from *Aries*: Which Position is yet absolutely necessary in this Case. For the Precession of the Equinox, which is about 50 Degrees, added to the 46 Degrees that the Earth was distant from *Aries* when the Flood began, must suppose the descending Orbit of the Comet to be now between 90 and 100 Degrees from *Aries*: At which Place none of the descending Orbits of the other Comets are now situate; as Dr. *Halley's* Table, and my Solar System grounded thereon, will readily shew. (3.) None of the other's Nodes are so situate, as is necessary to bring the Comet near enough to our Earth; I mean, between 90 or 100 Degrees from *Aries*; and so as to cross the Plane of the Ecliptick very near to the Distance of the Earth from the Sun; as is also plain from the same Table and System. Nay indeed, the wrong Situation of the descending Orbits, noted under the last Head, renders this due Situation of the Nodes plainly impossible. For it being necessary, that the Orbit it self intersect the Ecliptick it self in the 17th Degree of *Taurus*; this cannot possibly be in such a Situation of the Orbit, as that we have already mention'd to belong to all the rest of the known Comets. So that these other Comets were utterly incapable of being instrumental in the Deluge, even tho' their Periods should any of them agree; which yet we know not that any of them do.

II. This Comet was of the same Bigness with *Ubi supra.* that which pass'd by at that Time; I mean a very small one, and only 10 times as large as the Moon. This appears by Mr. *Flamsteed's* Determination of its apparent Diameter, about 20" when it was nearly as far off as the Sun: Where-

as he supposes that of the Moon at the same Distance to be about 6". So that if the Allowance be made for that large and dense Part of the Atmosphere, which hides the *Nucleus* or Comet it self from us, suppose 7", the Diameter of the solid Body it self will be only 13". Now the Cube of 13, or 2197, is to the Cube of 6, or 216, as about 10 to 1. Whence it appears, that this Comet is about 10 times so big as the Moon, or $\frac{1}{4}$ so great as the Earth, as the real Comet that occasion'd the Deluge ought to be.

III. The descending Part of the Orbit of this Comet was about the 17th Degree of *Taurus* at the Time of the Deluge, as that of the Comet at the Deluge must have been. For this descending Orbit is now in the 2^d Degree of *Cancer*; and if we allow 46 Degrees for its apparent Motion since the Deluge, which is very little different from the real Precession of the Equinox, the main, if not only Occasion of it; it will appear to have been in the 17th Degree of *Taurus* at that Time, according to the foregoing Computation.

IV. The descending Node of this Comet, which is of the greatest Consideration here, and liable to the greatest Variety of all, does also exceeding well agree in the present Case. For this is now in the 3^d Degree of *Cancer*; and if we allow, as before, 46 Degrees for its apparent Motion since the Deluge, or for the real Precession of the Equinox, the main, if not only Cause of it, it will appear to have been in the 17th of *Taurus* at that Time also. Nay, if we allow the least Inequality in these two Motions, or the least Alteration of the Planes either of the Ecliptick or of the Comet's Orbit, or of both, as we justly may, both

both from the Physical Causes, and Astronomical Observations, we may suppose them still nearer the Earth's Distance from the Sun, and so more exactly suitable to the Case of the Deluge.

V. The Period of this Comet most exactly agrees to the same Time, I mean to 7 Revolutions in 4028 Years, the Interval from the Deluge till its last Appearance 1680. For, as Sir *Isaac Newton* first observ'd, from its Elliptick Curvature before it disappear'd, that its Period must be in general above 500 Years; so has he and Dr. *Halley* since observ'd, that the same Comet has been seen four times; viz. the 44th Year before Christ; *A. D.* 531 or 532, *A. D.* 1106, and *A. D.* 1680; and that by consequence, it makes a Revolution in about 575 Years. Now if we make but a very small Allowance for the old Periods before Christ, and suppose that, one with another, it has revolv'd in $575\frac{1}{2}$ Years, we shall find that 7 such Periods amount to 4028 Years, exactly, according to that Number since the Deluge. This is so remarkable an Observation, and so surprizing, that it will deserve a particular Demonstration from the original Authors themselves. To begin then with the first of the Appearances recorded in later History, I mean that in the 44th Year before Christ, the Year that *Julius Cæsar* was slain; we have no fewer nor lesser Persons than *Seneca*, *Suetonius*, *Plutarch* and *Pliny*, to attest it; and the last, as bringing *Augustus's* own Words for his Voucher. Take the Account in those Words, as being the most authentick and remarkable. "On those very Days, says *Augustus*, when I was exhibiting some Games to the People, [begun about Sept. 26,] a Comet appear'd for 7 Days, and was seen in the Northern Part of Heaven. It rose about the

*Princip.
2^d Edit.
P. 465.*

*Sen. Nat. Quest.
l. 7. c. 17.
Sueton. in Jul. c. 88.
Plut. in Cæsar.
Plin. Hist. Nat. l. 2. c. 24.
Grut. ap. Uffer. Annal.*

Æneid.
VIII.

“ the 11th Hour of the Day: It was a remarkable
 “ one, and visible all over the World. The com-
 “ mon People believ’d, that it signify’d the Re-
 “ ception of the Soul of *Cæsar* into the Number of
 “ the immortal Gods. On which Account, the
 “ Image of this Star was added to that Statue re-
 “ presenting *Cæsar*’s Head, which we a while after
 “ consecrated in the *Forum*.” Accordingly it is
 known, that some of *Cæsar*’s Coins have a Star upon
 them, for a Memorial of this Comet; and observa-
 ble that *Virgil* hints at the same also, *Patrium aperit-
 tur vertice sidus*. *Plutarch*’s, *Seneca*’s, and *Suetoni-
 us*’s Words are almost the very same that are inclu-
 ded in the Passage from *Augustus*, and so need not
 be distinctly set down. Only the Time of its Ri-
 sing is by *Suetonius* set down about the 11th Hour,
 without the Words of the Day, which the other
 two have; and its Northern Position is only men-
 tion’d by *Augustus* himself. Now if we interpret
 the 11th Hour, or 11th Hour of the Day, to be
 either 11-a-clock before Noon, or an Hour before
 Sun-set, this will render the whole almost incredi-
 ble: it being next to impossible, that this Comet
 should be seen in the Day-time. But the *Romans*
 then accounting Midnight the Beginning of their
 Day, as is well known by Chronologers, we may
 reckon this 11th Hour to be 11 at Night, and all
 will agree to the Comet before us; and it will
 shew, that as it had been conceal’d by cloudy Wea-
 ther for some Time, so it now appear’d ascending
 from the Sun, with its long and splendid Tail,
 for a Week before the like cloudy Weather, or
 the Comet’s too great Remoteness render’d it no
 longer observable. Accordingly the Northern Po-
 sition of this Comet, noted here by *Augustus*, se-
 cures us still farther, that it must have been the
 same with that *A. D.* 1680, which is ever in the
 same

same Position, at the same Place of its Orbit : To say nothing of its remarkable Brightness, which I take to belong to its Tail, and which render'd it so very remarkable then in the World : In which Point it as well or better agrees with this, than with any other in the whole Cometary System. So that on all these Accounts, the Comet seen then by the *Romans*, and that seen *A. D.* 1680, must have been one and the same Comet. The next Period when this Comet might be seen again, according to the foregoing Time of its Revolution, was *A. D.* 531, or 532. When yet we hear nothing of it in *Hevelius's* History of Comets. But then we have it in *Lubienietz's* more exact Catalogue, out of *Zonaras*, the original Historian, whose Words are these, *Annal. L. xiv. p. 61.* " In the 5th Year of the Emperor *Justinian* [*A. D.* 531, or 532.] a Comet appear'd, of that sort which is called *Lampadias*. It sent its bright Tail upwards, and continued to shine 20 Days." Which Words exactly agree to this Comet. The next Period when it was to be expected, was *A. D.* 1106. at which Time the Historians are full of their Accounts of it. Take those Accounts in their own Words, as they stand in *Hevelius* and *Lubienietz*, who have given us a most compleat Collection of them in their Histories of Comets.

A. D. 1106. We saw a Comet of wonderful Brightness, from the first Week in *Lent*, until the Passion of our Lord. An extraordinary Star was seen to shine this Year on *Friday* in the Evening, Southward and Westward, and appear'd bright for 25 Days together, and always at the same Hour.

A. D. 1106. in the Month of *February*, 2 Days after the New Moon, a great Comet appear'd South-Westward. *A. D.* 1106. a Comet appear'd like a Fire, almost all the Month of *February*.

A very great Comet was seen in the Time of

U

Lent.

Lazarth. ex
Ursburg.
p. 148.
Lazarth. ex
Chron. No-
rimb. vel
aliunde.
Calvis. ex
Tyr.
Myxald.

Sigebert.
Func.

Lent. *Prætorius* adds, That the Emperor *Hen. IV.* died the same Year; which *Calvisius* also agrees to.

A. D. 1106. A Star, which we call a Comet, appear'd.

Append.

Marian.

Scoti.

Eastorm.

ex Chron.

Saxon.

Hist. Eccl.

ex Simeone

Dunelm.

A. D. 1106. A dreadful Comet appear'd, from the first Week in *Lent*, till the Vigil of *Palm-Sunday*. The same Year the Emperor *Henry IV.* died.

On the Year of our Lord 1106, the 14th of the Calends of *March* [*Feb. 16.*] a certain strange Star was discover'd, and was seen to shine between the *South* and *West* for 25 Days, after the same manner, and at the same Hour. It seem'd to be small and obscure; but that Light which went out from it was exceeding bright, and a Splendor, like a great Beam, proceeded from the *East* and *North*, and shot it self upon the same Star.

In these Testimonies, we may see that all the Circumstances of this Comet agree to that of *A. D. 1680.* I mean the Smallness and Obscurity of its *Nucleus*, the Brightness and Remarkableness of its Tail, its Position *South-West*, and the Direction of its Tail *North-East*. So that there is no Reason to doubt, but it was the very same. Only we must here note, that these two Periods were, one with another, three Quarters of a Year shorter than the last Period. For from *September*, in the 44th Year before Christ, till *February* or *March A. D. 1106.* are but 1148½ Years, or two Periods of 574¼ apiece, one with another: Whereas from the same *February* or *March, A. D. 1106.* till *February* or *March 1680,* when this Comet was about the same Position again, there are just 575 Years. It is rather a Wonder, that the three last Periods of our famous Comet are so very nearly equal, than that there is this small Inequality among them. Nor is it, by the way, any Wonder therefore, that the four first Periods after the Deluge are to be supposed

pos'd one with another rather above 576 Years, to agree exactly to that Time. 'Tis rather a Question, whether the rest of the Comets Periods will prove any of them near so equal in Proportion, as even that Allowance makes these to be? According-^{Princip.}ly, Sir *Isaac Newton* and Dr. *Halley* right-^{p. 480.}ly observe, that these Cometary Orbits are the ^{Praelect.}most easily and sensibly disturb'd, by the occasional ^{Physico-}Nearness of their Comets to other Bodies of all ^{Math.}others; and so considerable Inequalities are to be ^{p. 358,}expected among them. ^{359.}

Note, (1.) That it is highly remarkable, that this is the only Comet yet known, whose Node renders it capable of approaching very near the Body of the Earth, and that the same Node is still so little remote from the Earth's Orbit, as Dr. *Halley* well observes, that it brought this Comet about as near to the same as the Moon this very last Time. Hear his remarkable Words, and consider the Consequence of them in this Matter. "No Comet, says ^{Synops.}he, has hitherto threaten'd the Earth with a ^{Comet.in}nearer Appulse than that of 1680. For by Cal-^{calce.}culation, I find that Nov. 11. 1^h 6' after Noon, that Comet was not above a Semidiameter of the Sun, (which I take to be equal to the Distance of the Moon) to the *Northwards* of the Way of the Earth. At which Time, had the Earth been there, the Comet would, I think, have had a Parallax equal to that of the Moon." Nor can I pass over his following Words without setting them down, they are so apposite to my present Purpose. "The former Observations, says he, are to be suppos'd as spoken to Astronomers. But what might be the Consequences of so near an Appulse, or of a Contact, or lastly, of a Collision of these celestial Bodies, (which are none of them impossible) I leave to be discuss'd by the Philosophers.

(2.) Since this Comet's Period is 575 Years, its middle Distance must be about 5,600,000,000 Miles from the Sun; its longer Axis and greatest Distance twice so long, or nearly 11,200,000,000 Miles; its Aphelion Distance about 14 times as great as the Distance of *Saturn*; its greatest Distance to its least, as above 20,000 to 1: And so its greatest Light and Heat to its least, as above 400,000,000 to 1.

(3.) Since 575 Years appear to be the Period of the Comet that caus'd the Deluge, what a Learned Friend of mine, who was the Occasion of my Examination of this Matter, suggests, will deserve to be consider'd, *viz.* Whether the Story of the Phœnix, that celebrated Emblem of the Resurrection in Christian Antiquity; [that it returns once after 5 Centuries, and goes to the Altar and City of the Sun, and is there burnt; and another arises out of its Ashes, and carries away the Remains of the former, &c.] be not an Allegorical Representation of this Comet; [which returns once after 5 Centuries, and goes down to the Sun, and is there vehemently heated, and its outward Regions dissolv'd; yet that it flies off again, and carries away what remains after that terrible burning, &c. and whether the Conflagration and Renovation of Things, which some such Comet in its Ascent from the Sun may bring upon the Earth, be not hereby prefigur'd, I will not here be positive; but I own, that I don't know of any Solution of this famous Piece of *Egyptian* Mythology and Hieroglyphicks, as this seems to be, that can be compar'd with it.

Note, (4.) That none of those Comets whose Orbits are yet known, can come near enough to our Earth in their Ascent from the Sun, to cause the Conflagration. This is evident to those who consider Dr. *Halley's* Table, or my Solar System built upon

upon it; since none of them move in or very near the Plane of the Ecliptick; and those four which have their Nodes nearest the Earth's Orbit, and so might approach nearest to the Earth, are either such as have these Nodes so near only in their Descent to the Sun; as that in 1472, and that in 1618, and that in 1680; or go not any time much nearer to the Sun than the Earth it self, as that in 1688, and so are on all Accounts utterly incapable of affording Heat enough for such a Conflagration,

Note, (5.) That therefore the Period of Time *New Theo-* for that Conflagration, upon the Supposition that *ry, P. 450,* it is to be caused by a Comet, cannot now be dis-⁴⁵³cover'd by any natural Means; but must still remain, as formerly, only knowable from Divine Revelation.

Note, (6.) That hence those remarkable Corollaries, drawn from the accurate Solution of such Difficulties now, as formerly were plainly insoluble; I mean, the great Regard due to the ancientest sacred and prophane Records, and to the inspir'd Method whence they must have been deriv'd; the Imperfection of Human Knowledge; the Folly of rejecting reveal'd Truths, out of regard to uncertain Human Reasonings; the Wisdom of adhering to the most obvious Sense of Scripture; the Reasonableness of believing Scripture-Accounts and Scripture-Mysteries, tho' not fully comprehended by us; the Justness of expecting Satisfaction in moral Difficulties in due Time, from the like Satisfaction afforded already in those that are Philosophical, and the like, do all receive a new and surprizing Confirmation; and will therefore deserve a new and serious Consideration.

N. B. *Dr. Halley having himself given an Account of this Comet lately in Dr. Gregory's English Astronomy, p. 901, 902, 903; I here present it to the*

Reader verbatim, that he may compare the two Accounts together, for his more entire Satisfaction.

“ But as far as Probability from the Equality of
 “ Periods, and similar Appearance of Comets,
 “ may be urged as an Argument, the late won-
 “ drous Comet of 168 $\frac{2}{1}$, seems to have been the
 “ same, which was seen in the Time of our King
 “ Henry I. Anno 1106, which began to appear in
 “ the *West* about the middle of *February*, and con-
 “ tinued for many Days after, with such a Tail as
 “ was seen in that of 168 $\frac{2}{1}$. And again in the Con-
 “ sulate of *Lampadius* and *Orestes*, about the Year
 “ of Christ 531, such another Comet appear’d
 “ in the *West*, of which *Malela*, perhaps an Eye-
 “ witness, relates, that it was μέγας ἡ φοβερός, a
 “ great and fearful Star; that it appear’d in the
 “ *West*, and emitted upwards from it a long white
 “ Beam; and was seen for 20 Days. It were to
 “ be wish’d, the Historian had told us what Time
 “ of the Year it was seen; but ’tis however plain,
 “ that the Interval between this and that of 1106,
 “ is nearly equal to that between 1106 and 168 $\frac{2}{1}$,
 “ viz. about 575 Years. And if we reckon back-
 “ ward such another Period, we shall come to
 “ the 44th Year before Christ, in which *Julius*
 “ *Cæsar* was murder’d, and in which there ap-
 “ pear’d a very remarkable Comet, mention’d
 “ by almost all the Historians of those Times,
 “ and by *Pliny*, in his *Natural History*, l. 11. c. 24.
 “ who recites the Words of *Augustus Cæsar* on
 “ this Occasion, which lead us to the very Time
 “ of its Appearance, and its Situation in the Hea-
 “ vens. These Words being very much to our
 “ Purpose, it may not be amiss to recite them.
 “ *In ipsis Ludorum meorum diebus, sydus crinitum*
 “ *per septem dies, in regione Cæli quæ sub Septen-*
 “ *trionibus est conspectum. Id oriebatur circa unde-*
 “ *cimam*

“ *cimam horam diei, clarumque & omnibus terris*
 “ *conspicuum fuit.* Now these *Ludi* were dedicated
 “ *Veneri genetrici,* (for from *Venus* the *Cæsars*
 “ would be thought to be descended) and began
 “ with the Birth-day of *Augustus*, viz. *Sept. 23.* as
 “ may be collected from a Fragment of an old
 “ *Roman Kalendar* extant in *Gruter*, p. 135. and
 “ continued for 7 Days, during which the Comet
 “ appear’d. Nor are we to suppose that it was seen
 “ only those 7 Days, but possibly both before and
 “ after. Now are we to interpret the Words *sub*
 “ *Septentrionibus*, as if the Comet had appear’d in
 “ the *North*, but that it was seen under the *septem*
 “ *triones*, or brighter Stars of *Ursa major*. And as
 “ to its Rising *hora undecima diei*, it can no ways
 “ be understood, unless the Word *diei* be left out,
 “ as it is by *Suetonius*; for it must have been very
 “ far from the Sun, either to rise at 5 in the Af-
 “ ternoon, or at 11 at Night; in which Cases it
 “ must have appear’d for a long Time, and its Tail
 “ have been so little remarkable, that it could by
 “ no means be call’d, *Clarum & omnibus Terris*
 “ *conspicuum Sydus.* But supposing this Comet
 “ to have traced the same Path with that of the
 “ Year 1680, the ascending Part of the Orb will
 “ exactly represent all that *Augustus* hath said con-
 “ cerning it; and is yet an additional Argument
 “ to that drawn from the Equality of the Pe-
 “ riod. Thus ’tis not improbable but this Comet
 “ may have four times visited us at Intervals of
 “ about 575 Years: Whence the Transverse
 “ Diameter of its Elliptick Orb will be found
 “ $\sqrt{3} 575 \times 575$ times greater than the annual
 “ Orb; or 138 times greater than the mean Di-
 “ stance of the Sun; which Distance, tho’ im-
 “ mensely great, bears no Proportion to that of
 “ the fix’d Stars.

Lib. xii.
p. 794.

P. 172,
173. PRIUS.

The *second* Way of Probation, is that of Historical Relation, That at the Deluge a Comet did so pass by. And of this sort of Evidence we are not wholly destitute; For (1.) that a Comet did really appear at the Deluge, we have the Testimony of several Authors in *Hevelius's Cometographia*. Nay, ^a *Pliny* also, a learned ancient Author, and probably from the *Egyptian* Records too, not only mentions a Comet that appear'd in the Reign of *Typhon*, (that is, at the Deluge, or immediately before it, as has already been prov'd) but also speaks of the direful Effects it had. Which Testimony, considering how few Remains we have of those so very ancient Times in prophane Authors, is very remarkable, and of great Weight: Especially when he says, that *Typhon* gave it its Name; insomuch that the Mythology of *Typhon*, or *Typhoëus* in the Poets, may seem to have a plain Reference to the Comet, and that Deluge which was occasion'd by it; as indeed many of the Particulars are so like, ^b that one can hardly avoid think-

^a *Plin. Nat. Hist.* ii. 25. Diraque comperta Æthiopum & Ægypti populis, cui nomen ævi Rex dedit Typhon, ignea specie, & spiræ modo intorta, visu quoque torvo, nec stella verius quam quidem igneus nodus.

^b *Apollodor. Bibliothec.* l. 1. c. 6. § 3. Ὡς δ' ἐκράτησαν οἱ Θεοὶ τῇ Γηγάρῳ, Γῇ μᾶλλον χολωθείσα, μίσυν Ταραύρῳ, καὶ γλυνῶ Τυφῶνι ἐν Σικελίᾳ, μεμιγμένῳ ἔχοντι φύσιν, ἀνδρὸς καὶ θηλείας. Οὗτος μὲν καὶ μεγέθει καὶ δυνάμει πάντων διένεκεν, ὅσους ἐξήντισε γῆ. ἡ δ' αὐτὴ τὰ μὲν ἄλλα μηρῶν ἀπλετον μέγεθος ἀνδρόμορφον, ὥς ἐπιδέχεται μὲν πάντων τῶν ὄντων· ἡ δὲ κεφαλὴ πολυλάκεις τῶν ἄστρων ἔφανε· χεῖρας δ' εἶχε, τὰ μὲν ἐπὶ τῇ ἐσπέρῳ ἐκτεινομένη, τὰ δὲ ἐπὶ τὰς ἀνατολὰς. Ἐκ τούτων δ' ἐξῆχον ἑκατὸν κεφαλὰς ὀφθαλμῶν, τὰ δὲ ἀπὸ μηρῶν, σπέρμας εἶχεν ὑπερμεγέθους ἐχιδνῶν, ὧν ὅλκοι πρὸς αὐτῷ ἐκλεινόμενοι κορυφῇ συνελθόντων πολλὴν ἐξέσαν. Πᾶν δ' αὐτῇ τὸ σῶμα κατεπλήρωτο. Αὐχμηραὶ δ' ἐκ κεφαλῆς καὶ γλυνῶν τεύχεα ἐξέλυε μὲν. Πῦρ δ' ἐδέχετο τοῖς ὅμοιοι. Τοιαῦτα ὦν ὁ Τυφὼν καὶ τηλικαύτης, ἡμάρτας βάλλων πύργους

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ing there is some uncommon Relation between them. Particularly the Account which is given of *Typhon's* Death in prophane Authors, makes it probable, not only that he perish'd in the Deluge, but also that the Deluge it self arose from the Approach of a Comet, that is, from such a Cause as would necessarily produce the same Effects in the Earth, which we shew were produc'd at the Deluge by the Comet: For 'tis said by some, that *Typhon*, or *Typhoëus*, lies submersed in Water; and by ° others, that he was overwhelm'd with *Vide Not.* Mountains, *Volcano's*, or large Quantities off, p. 174-
Earth. ° *Pindar* says, all *Sicily* lies upon him: prius.
And ° *Ovid* follows him in asserting the same

ἐπ' αὐτὸν ἕρπον, καὶ συνελθὼν ὁμῶς καὶ βοῆς ἐφέρετο. Πολλὰ δ' ἐν
τῷ τόματι πρὸς ἐξέρεσιν ζάλη. Vide etiam Val. Flacc. Argon.
lib. 4. § 236, 237. Et Plutarch. de Iside & Osiride passim.

° *Virgil. Æn.* ix. § 715, 716.

Tum sonitu Prochyta alta tremit, durumq; cubile
Inarime, Jovis imperiis imposita Typhæo.

Et *Lucan.* v. § 200, 201. Et *Ovid. Fast.* iv. § 491, 492.

Alta jacet vasti super ora Typhoëos Æne,

Cujus anhelatis ignibus ardet humus.

Et Schol. *Pindari in Pyth.* i. § 33, &c. Στασιάζει καὶ ἡ πόλις
τῷ Τυφῶνι ἰσορία. Οἱ μὲν γὰρ αὐτὸν ὄρεσιν βοιωτίας ὑποκείαζ
ἔφασαν, καὶ ὡς εἰσιν αὐτόθι πυρὸς ἀναδόσεις. οἱ δ' ἐν Φρυγίᾳ
ἵτερον, ὃ ἐν Λυδίᾳ. Ἀρτέμιον δέ τις ἰσορικὸς, πιθανώτερον λογο-
ποιεῖ, καθάπαξ γὰρ φησι πάντας ὅσους ἔχον πυρὸς ἀναδόσεις, ἐπὶ
Τυφῶνι καίει.

° *Pindar. Pyth.* i. § 29, &c. Ὅς τ' ἐν Αἰνῶ Ταρταρῶν καὶ
Θεῶν πολέμιος, Τυφῶς ἐκατολκάρων. τὸν ποτε Κιλικίον θρέψεν
πολυώνυμον ἄνθρωπον ἔν γε μὲν ταῖς ὑπὲρ Κύμας ἀλιεῖες ὄχθαι,
Σικελία τ' αὐτὸς πρὸς ἑρῆνα λαχναίνετο· κίων δ' ἐρῆνια σωέχρη
νιφόεσσ' Αἴτνα, &c.

° *Ovid. Metamorph.* V. § 346, &c.

Vasta Giganteis ingesta est insula membris

Trinacris, & magnis subiectum molibus urget

Æthereas ausum sperare Typhoëa sedes.

Nititur ille quidem, pugnatq; resurgere sæpe:

Dextra sed Ausonio manus est extensa Peloro;

Læva, Pachine, tibi; Lilybæo crura premuntur;

thing :

thing: And lastly, *Valerius Flaccus* ^f more accurately says, he was first overwhelmed with Waters, and then with Earth. Now as the Tradition of *Typhon*'s being submers'd in Water, seems evidently to proceed from his perishing in the Deluge; so upon Supposition that the Deluge arose from a Comet, 'tis equally obvious why he is said to be overwhelmed with Earth, when we consider that the Diluvian Matter from the Comet's Atmosphere contained in it a great Quantity of earthy and stony Particles, which made a Sediment upon the Face of the *Antediluvian* Earth, and buried all the Old World under it; as we shall shew hereafter. (2.) Likewise in that ancient and remarkable Tradition in *Plato*, concerning the Primitive State of the World, and the Change made at the Fall, there is not only a bare Notice taken of a great *Catastrophe* which happen'd some considerable Time afterwards, and brought the World into very great Danger, namely, the Deluge; but also 'tis plainly intimated, that it was brought about by the same sort

Degravat Ætna caput, sub qua resupinus, arenas
Ejectat; flammamq; fero vomit ore Typhœus.
Oppidaque, & magnos evolvere corpore montes.
Inde tremit tellus, &c.

^f *Valer. Flacc. Argon. ii. v. 23, &c.*

Scopulis sed maximus illis
Horror abest, Sricula pressus tellure Typhœus.
Hunc profugum, & sacras removens pectore flammæ
Ut memorant, pressum ipse comis Neptunus in alto
Abstulit, implicuitque vadis; totiensque cruenta
Mole resurgentem, torquentemque ignibus undas,
Sicanium dedit usque fretum; cumque urbibus Ætnam
Intulit, ora premens: trux ille, ejectat adest
Fundamenta jugi; pariter tunc omnis anhelat
Trinacria, injectam fesso dum pectore molem
Commovet experiens, gemituque reponit inani.

of Cause, as that from which the Earth it self was originally formed, viz. in our *Hypothesis*, the Atmosphere of a Comet, and that this same Cause made the Earth move *slower* than it did before: Which is *really* true of its *diurnal*, and apparently so of its *annual* Motion; since $29\frac{1}{2}$ *Postdiluvian* Days contain as much absolute Time as 30 *Antediluvian* ones; and since the Tropical Year, which was then but 360 Days, is now above 365, as will appear presently. All which, and several other *Phænomena* of the Deluge, will best be seen in the Passage it self, which here follows:
 “ For some considerable Time after this, the Tumult, Perturbation and Earthquakes [caused by the Shock which was then given to the Earth, and by its commencing a contrary Motion to what it had before] having ceased, and a Calm succeeding, the World went on in its settled Course; — but at last, more remissly, [or more slowly.] The Cause of this was that material Part of its Constitution, which anciently belong’d to it: [Here the Cause of the Earth’s Retardation is assign’d to such Matter as belong’d to it of old, before its Formation, that is, to the Atmosphere of a Comet; which is

§ Platonis Politic. Operum, p. 176. D, &c. Μετὰ τὸ ταῦτα, παρελθόντων ἱκανῶς χρόνων, θορύβος τε καὶ ταραχῆς ἤδη παύσασθαι καὶ τῶν σεισμῶν, γαλήνης ἐπιλαβόντων, εἰς τε τὸ εἰωθότα δρόμον τὸ ἑαυτῷ κατακοσμέσθαι ἤκει, — τελευτῶν δὲ ἀμβλύτερον. Τῶν δὲ αὐτῶν τὸ σωματικὸν τὸ συγκράσεως αἴτιον, τὸ τὴν πάλαι ποτε φύσεως ξυώτερον, ὅτι πολλῆς ἐν μέτοχον ἀταξίας, πρὶν εἰς τὸν νῦν κόσμον ἀφικέσθαι. Παρὰ μὲν γὰρ τῷ συνθέντι, πάντως καλὰ κέκειται. ὡς δὲ τὸ ἔμπροσθεν ἕξως ὅσα χαλεπὰ καὶ ἄδικοι ἐν ἔργῳ γίνονται, ταῦτα ἐξ ἐκείνης αὐτὸς τε ἔχει καὶ τοῖς ζώοις ἐναπεργάζει. — Διὸ δὴ καὶ τότε ἤδη Θεὸς ὁ κοσμήσας αὐτὸν, καθάρων ἐν ἀπορείᾳ ὄντα, κηδόμενος ἵνα μὴ χαμαθῇς, ὑπὸ ταραχῆς ἀλαυδεῖς, εἰς τὸ τὴν ἀνομοιότητι ἀπειρῶν ὄντα τόπον δύναιτο πάλιν ἐφειδῆ αὐτῷ τῶν πηδαλίων γιγνόμενον, τὰ νοσήσαντα καὶ λυθέντα ἐν τῇ καθ’ αὐτὸν πρῶτῃ παλαιᾷ τρέφει, κοσμεῖ τε, καὶ ὑπανορθῶν, ἀθάνατον αὐτὸν καὶ ἀγήρω ἀπεργάζει.

farther

farther confirm'd from what follows:] *For this Matter was in great Confusion, before it was form'd into the present World. For all the Good and Regularity there is in the World, proceeds from him that formed it; but all the Evils and Irregularities, in its self or its Animals, [such a sort of Matter as belong'd to] its former Constitution. [Here all the Inconveniencies and Irregularities of the Earth, in its Postdiluvian State, are justly attributed to this Chaotick Matter, deriv'd from the Comet's Atmosphere at the Deluge.] — Wherefore God, who first formed the World, being solicitous lest it should perish by fluctuating in this Storm, and should be dissolv'd and pass away into the infinite Spaces of Dissimilitude; He therefore sat again at the Helm, restored its diseased and disjointed Parts to their ancient Order and Place, and put it above the Reach of Death or Decay. This whole Passage is so signal an Attestation to the present Hypothesis, and to the Phænomena of the Deluge depending thereon, as not to want any other Comment than the present Account of the Deluge.*

Gen. viii.

21, 22. &

ix. 8—17.

The *third* and last possible way of proving the Truth of the present *Hypothesis*, is the Being of such plain and sensible Effects, as must be undoubted Consequents of such an Assertion, and without the Supposal thereof were perfectly unaccountable; which is the very Method of Probation I shall here use, and do very much depend upon. There are several Degrees of Evidence, and Kinds of Proofs, very different from those made use of in the Mathematicks; which yet are little less satisfactory to the Minds of wise Men, and leave little more Room for doubting than they. Several Sorts of Propositions must be evinced by several Sorts of Arguments; and whatever possible and easy Assertion has

has all the Proofs which its Nature requires, or could justly be expected upon Supposal of its real Existence, ought to be admitted for true and evident. Thus in that sort of Things we are now upon; if a certain real Cause be assign'd, which being suppos'd, would necessarily infer several plain and visible Effects, and occasion several sensible *Phænomena*; 'tis plain, if those Effects and *Phænomena* be upon Examination found to be correspondent, and as they must and would be on the real Being of such a Cause, the Existence of that Cause is prov'd. And as where the Effects are few, ordinary, otherwise accountable and incapable of Reduction to Calculation, or Accuracy of Correspondence in the just Quantity and Proportion necessary; the Proof is weak, and only probable; and as where several of the Consequents of that Cause agree well enough, yet some others disagree, the Disagreement of one or two, is a stronger Objection against, than the Coincidence of the rest an Evidence for the same, and the Proof none at all: So on the other side, where a Cause is assigned, whose certain consequent Effects must be very many, very surprising, otherwise unaccountable, correspondent on the greatest Niceness of Calculation in the particular Quantity and Proportion of every Effect, and where withal no disagreeing *Phænomenon* can be urg'd to the contrary; the Evidence hence deriv'd of the Reality of the assign'd Cause, tho' of a different Nature, and, if you will, Degree too, from Demonstration, is yet little less satisfactory to the Minds of wise and considering Men, than what is esteem'd more strictly so. Thus, for instance, Astronomers at this Day find little more Inclination or Reason to doubt of the annual and diurnal Motions of the Earth, than
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of any strictly demonstrated Proposition; and as much, in a manner, take it for granted in all their Reasonings, as they do the Propositions in *Euclid*, tho' the Evidence for the same be in its Kind different from, and inferior to the other. And thus, as I have before observ'd, Sir *Isaac Newton* has given sufficient Evidence of the Universal Law of *Mutual Attraction*, and *Gravitation* of Bodies; which accordingly there is no more Occasion to doubt of, than of those common Matters of Fact or History, of which no wise Man ever made any question. And thus it is that I hope to evince the Truth and Reality of that Cause assign'd in this Proposition, *viz.* by proving that those visible Effects or *Phænomena* relating to the Universal Deluge, which are very many, very surprizing, hitherto unaccountable, several of which are capable of Calculation as to the particular Time, Quantity, and Proportion of the respective Particulars are every one so, and no otherwise, as on Supposal of the assign'd Cause they either certainly must, or at least probably would have been. And as upon a Demonstration of the Disagreement of any one *Phænomenon*, which were a necessary Consequence of the same, I must own the Falseness of the Proposition before us; so, I hope, if the Universality of Correspondence, even to the Exactness of Calculation in proper Cases be establish'd, and no contradictory Instance can be produc'd; it will be allow'd, that I have sufficiently evinced the *Reality*, and, in a proper Sense, *Certainty* of the same Assertion. This then being premis'd, 'tis plain, that every one of the particular *Phænomena* of the Deluge afterward accounted for, is a proper Argument of this Proposition, and might justly claim a Place here on that Account.

But

But because such an Enumeration of them beforehand would prevent their own more peculiar Place hereafter, and disturb the propos'd Method of the ensuing Theory, I shall leave them to their proper Places; tho' with this Premonition, That several of them do singly so exactly fit the otherwise unaccountable *Phænomena* of Nature, and of the Deluge, and determine the Time and Circumstance of the latter so nicely, that their separate Evidence is very considerable; and when taken conjointly with the rest, as satisfactory as I think the Nature of the Thing is capable of. But besides these particular correspondent *Phænomena* of the Deluge, and after the Discovery of the most of them, I found Proofs of somewhat another Nature; which not only confirm'd all that I had before observ'd, but enabled me to determine the Time when the Flood began, to the greatest Exactness possible; which therefore I shall alone produce here, reserving those other for their own Places hereafter. Now, on the *Hypothesis* that a Comet pass'd by the Earth (till then revolving circularly about the *Sun*) at the Time, and in the Manner assign'd by the Proposition, the necessary Effects or Consequences of it are these Six. (1.) The circular Orbit of the Earth would be chang'd into that of an *Ellipsis*; and the *Sun*, which was before in the Centre of the Circle, would be afterwards in that *Focus* of the *Ellipsis*, which were nearest the Place at which the Attraction of the Comet happen'd. (2.) The Year, after such a Passing by of the Comet, would be increased ten Days, one Hour, twenty eight Minutes and an half. (3.) The Time of the Passing by of the Comet, or the Beginning of the Deluge, to be determin'd by the Place of the *Perihelion*, must be coincident with that assign'd

*Hypoth. 7.**prius.**Lem. 51.**cum Coroll.**prius.**Lem. 54.*

sign'd in the *Mosaick History*. (4.) The very Day of the Comet's passing by, or of the Beginning of the Deluge, to be determin'd from the Astronomical Tables of the Conjunctions of the *Sun* and *Moon*, must be coincident with the Time determin'd by the said Place of the *Perihelion*, and with the very Day assign'd in the *Mosaick History*. (5.) The Quantity of Acceleration to be determin'd *à priori*, from the Force of the Comet's Attraction, must correspond with that which the present *Elliptick* Orbit does require. I say nothing of the Retardation of the diurnal Rotation of the Earth here by this Matter from the Comet, as I did formerly; because it will appear, from what I have lately discover'd relating to Magnetism, that the Retardation is owing, in Part, to a Cause very remote from our present Business; and that till the other Cause can be stated, as to its Proportion of the Retardation, we cannot well estimate what Proportion thereof belongs to the Stoppage of the diurnal Motion at the Deluge, by the Quantity of adventitious Matter then gain'd. All which Effects or Consequents, that they are, *de facto*, true and real, I shall now prove.

I. The Orbit of the Earth is now *Elliptical*, and the Sun is in that *Focus* thereof, which was nearest the Place of the Earth, when the Deluge began. This Proposition is sufficiently known to Astronomers, as to the former Part of it: And if it be consider'd, That the Earth, when the Deluge began, was at or very near that Degree of the *Ecliptick*, where the *Perihelion* was afterward, as has already appear'd; the latter Part will be equally evident with the former.

II. The

II. The Year, before the Flood, was in absolute Duration ten Days, or more nicely, ten Days, one Hour, and twenty eight Minutes and an half shorter than the present; tho' it had just 360 *Antediluvian* Days then in it.

In order to the Proof of which, I shall shew first in general, that the *Antediluvian* Year was different from, nay, shorter than the present Year; and afterwards determine the particular Length thereof more exactly; and shall comprise what Reasons I have for these Assertions in the following Arguments.

(1.) The true Length of the Solar Year was so long unknown after the Deluge, that there must have happen'd some mighty Change and Lengthning thereof at the Deluge, or else no rational Account can be assign'd of such gross and so lasting an Ignorance. 'Tis not to be question'd, but the *Antediluvian* Patriarchs were perfectly acquainted with the *Antediluvian* Year; every one of those mention'd in Scripture having seen so many Summers and Winters, or natural Solar Years, that himself were able to ascertain their Length, and correct any Mistake about them. 'Tis also not to be doubted, but the *Postdiluvians* would have retain'd the same Year, and determin'd it by the same Number of Days as their Forefathers, had they found it to agree with the Course of the Sun and Moon *then*, as it did formerly. But 'tis evident from the ancientest Authors, as has been just now prov'd, that 'twas many Hundreds of Years after the Deluge, e're the most Learned Nations rectify'd their Year to the Sun's Course, or arriv'd at more than three hundred and sixty Days in their Accounts. Which Number accord-

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ingly was the Measure of the Degrees of the Zodiack, or Ecliptick Circle, and thence of all other Circles among the Astronomers; and the Measure and Standard of a Year for many Ages; till Astronomical Observations forc'd Men to correct the same.

Now all this, on the present *Hypothesis*, is easy and natural; That when the *Antediluvian* Year was just 360 Days long, and after the Deluge was insensibly become above three hundred and sixty five Days, without the least Knowledge or Suspicion of any Change therein; 'tis, I say, very easy and natural in this Case to suppose, that upon their observing, in Length of Time, the Seasons to be protracted, and return still later every Year than other; (as on the retaining the Antediluvian Year must needs happen) and consequently their ancient Standard of three hundred and sixty Days, to be too short for the Sun's Revolution; that they should lengthen their Accounts to three hundred and sixty five, and at last to $365\frac{1}{4}$ Days in the whole Year. And indeed, this most ancient Adjustment of the Year and Months, with the Degrees of a Circle, and of each Sign in the Ecliptick, was found so easy, ready, and useful on all Accounts, that even when the odd five Days were added afterward, they were not inserted into the Months, nor perhaps esteem'd Part of the Year, but look'd upon as *Ἡμέτερι Ἐπαγόμεναι*, *adventitious* or *odd Days*, or *Days superadded* to the old and establish'd Year of the World; as being of a quite different Denomination and Character from all the rest. However, 'tis very agreeable to Reason and ancient History, that on the Observation of the Protraction of the Seasons, and on the Improvement of Astronomy, the Year should be increas'd from three hundred and sixty

to three hundred and sixty five Days; and afterward, (the Observations of the more Learned Astronomers enforcing it) from three hundred sixty five to $365\frac{1}{4}$, or the *Julian* Year, which with us is retain'd to this very Day. All this is, I think, easy and natural in the present Case, upon that *Hypothesis* which is here defended; but without it, 'tis very strange and unaccountable. 'Tis, I say, very *strange* and *unaccountable*, either that the *Antediluvian* Patriarchs should not know the Length of their own Year; or that none of their Posterity, but such as were guided in it by Divine Revelation, should retain the same afterwards; but be forc'd to make use of one that was so far from corresponding to those Seasons, and that Revolution of the Sun, which a Year was on purpose design'd to be commensurate to. Which Conclusion is farther confirm'd,

(2.) By the Essential Difference of the ancient Years among several Nations since the Deluge: Some of which made use of *Solar*, and others of *Lunar* ones, or endeavour'd to adjust their Periods to those of each of these Luminaries. This Difference of Years is known in Antiquity, has been the Occasion of great Disputes, and is not yet a Stranger to the World. Nay, so far as I find, some of those Nations who agreed with the most general Standard of three hundred and sixty Days, suppos'd that Number agreeable in some measure to the *Lunar*, as well as to the *Solar* Course, as consisting nearly of 12 Synodical or Monthly Revolutions of the former, as well as of a single Annual one of the latter; and embrac'd it as much, if not more, on the Account of its imagin'd Correspondence with the *Moon*, as of a like imagin'd Correspondence

dence with the *Sun*. Now this essential Difference of *Solar* and *Lunar* Years in the eldest Antiquity after the Flood, is on no other Grounds so accountable, as that the *Antediluvian* Year having been deliver'd down from their Forefathers to have agreed with the Courses both of the *Sun* and *Moon*, (as on the present *Hypothesis* it really did) some Nations followed *one* Branch, and others *another* of the same Tradition: And when they no longer were commensurate, accommodated their Accounts to the one or the other, according as the one or the other was most prevalent and universal among them. This is an easy and rational Account of this essential Difference of *Solar* and *Lunar* Years, so variously followed by many Nations since the Deluge: Which otherwise, if the Year was of the same Length with the present, and fix'd before the Flood, 'tis hard to assign the Original of. But if that were, as in this *Hypothesis*, both a *Solar* and *Lunar* Year, all is very easy, and what must naturally happen upon an imperceptible Change at the Deluge. Which will be still farther confirm'd, if we consider,

(3.) That the Moon's other Motions, *Diurnal* and *Menstrual*, are still so accurately adjusted and commensurate to each other, that 'tis very probable the *Annual* was alike adjusted and commensurate to those in the primitive Constitution of Nature. 'Tis certain, the Moon accompanies our Earth, and has her *Annual* Revolution exactly equal to that of the Earth. 'Tis also certain, as has been before observ'd, that her *Menstrual* Periodical Revolution about the Earth, is exactly equal to her *Diurnal* about her own *Axis*: Which wonderful and remarkable Coincidence

*Em. 42.
prius.*

dence or Correspondence of two such entire distinct Motions, renders it highly probable, that the third or *Annual* Revolution was not by Providence originally design'd to be so incommensurate to those others, as since the Deluge it most evidently has been; and that to the greatest Trouble and Perplexity of many Ages, and the entire Disturbance of the ancient Chronology. Where we cannot but in one Case acknowledge the most exact Interposition of Providence, in the Equality of the *Menstrual* and *Diurnal* Revolutions; and the notable Effect thereof, the exposing of almost the same Hemisphere of the Moon to the Earth continually; we cannot sure be unwilling to own a like Interposition in the other, in the Commensurability and Correspondency of the same *Menstrual* and *Diurnal* Revolutions to the *Annual* one of it self, and of its Companion the Earth: Especially where the Reason and Advantage of such an Adjustment, (the easy and regular Accounts of Time through the World thence arising) is much more plain and evident, than in that other Case, of which yet there can be no reasonable Doubt or Hesitation: Which therefore considerably enforces the fore-mention'd *Hypothesis*; according to which, the wise and careful Interposition of Providence in the Original Constitution of the World, appears to have been as accurately solicitous and engag'd in the Adjustment of the *Annual* Motion to the *Menstrual*, as 'tis unquestionably true in the like Correspondence of the *Menstrual* to the *Diurnal*, so worthy the present Consideration and Admiration of Astronomers: Which will be most of all confirm'd by the exact Agreement of the several Periods, to be taken notice of in the next Place.

(4.) The Eccentricity of the Sun is so exactly coincident with the Epact of the Moon; or the annual Motion in the circular Orbit before the Deluge, so nicely equal to thirteen Periodical, and twelve Synodical Revolutions of the Moon; that 'tis very improbable it should be wholly by Chance, or without any relation of one to another. The Eccentricities of Planets are various, uncertain, and boundless; and 'twill be next to impossible, in such Cases, to observe accurate Coincidences, where nothing but Chance is concern'd, and there is no Analogy or Connexion in Nature for them. If there were a certain Watchword, out of 500, pitch'd upon among certain Conspirators, and a Person was taken on Suspicion, and prov'd to have nam'd that very Word to his supposed Partner; it were in Reason, and the Opinion of the World, 499 to one he before knew of it, and did not by Chance only hit upon it. If any ancient Historian should assert, that a certain remarkable Accident happen'd on such a Day, and such an Hour, of a given Year; and a Way was afterward discover'd of determining the Time on which, if it really did happen, it must have done so; tho' the Authority of the Author were not considerable otherwise, no Doubt would be any more made of his Veracity in that Point, if the Coincidence was so exact as to determine the same Hour mention'd by the History. Thus if on other Intimations it be conjectur'd, that the Earth mov'd circularly before the Deluge, and the Year was both a Solar and Lunar one; and if afterwards the Eccentricity of the Earth's Orbit, and the Lunar Epact, or Difference between the Solar and Lunar Year, be reduc'd to Calculation, and found accurately coincident,

when

when the Eccentricity of no other of the Planetary Orbits, is at all so; there is, I think, very great Reason to believe that Coincidence to be founded in Nature, and that the Alteration of the Year, just so much as those agreeing Quantities require, was the true Occasion thereof. The mean Eccentricity requisite to correspond to the Lunar *Epaēt*, must be about $\frac{1}{100000}$ ^{Lem. 58. cum Ceroll. prius.} of the entire middle Distance: That of *Saturn* is $\frac{5}{100000}$, that of *Jupiter* $\frac{4}{100000}$, that of *Mars* $\frac{2}{100000}$, that of *Venus* $\frac{7}{100000}$, that of *Mercury* $\frac{2}{100000}$, that of the *Moon* $\frac{5}{100000}$; which all widely differ from the Quantity here necessary. But when we consider the Eccentricity of the *Magnus Orbis*, or Orbit of the Earth's and Moon's annual Course, it exactly accords, and is about $\frac{1}{100000}$ of the entire middle Distance; as we have before particularly observ'd, and as the Moon's *Epaēt* most nicely requires. 'Tis, I confess, not *impossible* that Calculations and Numbers, in which there is all imaginable Room for Diversity under or over, may be coincident, without any natural Dependance or Analogy one to another. 'Tis *possible*, that I may several times by Guess, or at a Venture, hit upon any Number which another Person has in his Mind. 'Tis *possible*, a Gamester may, without any foul dealing, throw all Sizes or Aces, be the Dice never so many, a hundred times together. These Things, it must be own'd, are *possible*; and so no Compact or Collusion can be *demonstrated* by such Coincidence; neither, consequently, do I pretend that this, or any of the like Coincidences in the present Theory, do absolutely *demonstrate* that Assertion they are brought to prove. But as in the former Cases, the Observation of the mention'd Coincidences would afford Evidence fully *satisfactory* of some Mystery, Cunning,

ning, or Artifice us'd therein; so I think it ought to be in the present Case: I mean, where all Things else are rightly correspondent, and no contradictory Instances to be alledg'd, the nice and accurate Coincidences of Calculations in this, and the other proper Cases through the present Theory, ought to satisfy the Minds of considering Men, of the real Truth and Evidence of the Proposition on which they all depend, and from which they are deriv'd; and particularly, that the Lunar *Epaet*, and *Sun's Eccentricity*, which are so nicely equal to each other, must have a natural Relation and a common Occasion, *viz.* the Alteration of the Year at the Deluge.

III. The Time of the Passing by of the Comet, or of the Beginning of the Flood, determin'd by the Place of the *Perihelion*, is agreeable to that mention'd in the *Mosaick* History. 'Tis certain, that the Place of the *Perihelion* of the Earth's Orbit, from Mr. *Flamsteed's* latest Observations, is now in the latter End of the 8th Degree of *Cancer*; and tho' by Mr. *Flamsteed's* Table of its Motion, it go forward in 4070 Years above 56 Degrees, yet that Number being a few Degrees more than either Mr. *Street's* or *Tycho's* Tables, or indeed than Sir *Isaac Newton's* Calculation *à priori* corrected, does allow; we may take 50 Degrees, or thereabouts, being *Tycho's* Number, and near enough to the other Calculations also; and then we shall find, that the *Perihelion* of the Earth's Orbit, or the Point B in the Figure, was at the Deluge from the present *Hebrew* Chronology, on or about the 17th Degree of *Taurus*, answering to the 17th Day of the second Month from the Autumnal Equinox, or the Beginning of the ancient Year: On which very Day, by the
express

Fig. 3.

express Testimony of the sacred Historian (a-Gen. vii. greening within a Day or two with the corrected 11. Testimonies of ^b *Berosus* and ⁱ *Abydenus*, and to a single Day with the express Testimony of ^k *Plutarch*) the Deluge began. Which Exactness of Coincidence I look upon as not a little remarkable.

And *Note*, That as one or two Coincidences under a former Head, are somewhat exacter to the present Tables of Astronomy in the present *Hebrew*, than in the other exacter Chronology; so does the Coincidence before us agree better with the exacter Chronology than with the present *Hebrew*, as allowing 52 Degrees to the Precession of the Equinox, while the *Hebrew* allows but 46.

p. 452

IV. The *very Day* of the Comet's Passing by, or of the Beginning of the Deluge, determin'd from the Astronomical Tables of the Conjunctions of the *Sun* and *Moon*, is exactly coincident with that before *nearly* determin'd by the Place of the *Perihelion*, and *exactly* by the *Mosaick History*. It has been before prov'd, that seeing the *Moon* still accompanies the Earth, it must needs

^b Ἐπὶ Ζισίδρου μέγαν κατακλυσμὸν γυνείας ἀναγράφει, ὃ τὸν λόγον ἔστω. Τὸν Κρόνον αὐτὰ κτ' ἃ ὑπὸν ἐπιστάντα φάναι, μύθος Δεσίου ιε. τὰς ἀνθρώπων ὑπὸ κατακλυσμῷ φθαρῆσεα, &c. Berosus apud Syncel. pag. 30.

ⁱ Σισίδρου δὲ Κρόνον προσημαίνει ἔσεακ' πληθὺν ὁμῶς Δεσίου ιε. Abydenus apud Euseb. Chron. lib. 1. p. 8.

^k Ταῦτα δὲ παραχθῆναι λέγεται [de ingressu Osiridis in Arcam loquitur] ἑδδόμη ἐπὶ δέκα μύθος Ἀθῶν, ἐν ᾧ τὸ Σκορπίον ὁ ἥλιος διέξεισι, ὀγδοὺν ἔτος καὶ εἰκοσὸν ἐκείνη βασιλεύοντι Ὀσίριδι. Plutarch. de Iside & Osiride, p. 356.

Ἐδδόμη ἐπὶ δέκα τὸ Ὀσίριδι γυνείας τελευτὴν Ἀιγύπτου μυθολογεῖται. — διὸ καὶ τὴν ἡμέραν ταύτην ἀνιφραξιν οἱ Πυθαγόρειοι καλεῖσιν, καὶ ὅλως τὸ ἀεθμὸν τῶτον ἀφοσιῶν, p. 367.

have

Lem. 57.
prius.

Gen. vii.
11.

have been about three Days, or three Days and a half past the New or Full, at the Passing by of the Comet. It has also been before prov'd, that the Flood began either in the Year of the *Julian* Period 2365, and the 2349th before the Christian *Æra*, according to the present *Hebrew* Chronology; or in the Year of the *Julian* Period 1788, and the 2926th before the Christian *Æra*, according to the other more exact Chronology. Now it appears by the Astronomical Tables of the Conjunctions of the *Sun* and *Moon*, that the New Moon happen'd at the Meridian of *Pekin* in *China*, whereabout probably *Noah* liv'd immediately before the Deluge, or about two-o'-Clock on *November* the 25th (in the *Julian* Year) in the Morning: And so, at about two-o'-Clock on *November* the 28th in the Afternoon, 'twas about 3 Days and a half after the New. Which being the 17th Day of the Second Month from the Autumnal Equinox, is the very same pitch'd upon from the Place of the *Perihelion*, and expressly mention'd in the sacred History: And by so wonderfully corresponding therewith, gives the highest Attestation to our *Hypothesis* that could, for the Completion and Consummation of the foregoing Evidence, be reasonably desir'd. Nor does the other Chronology answer much worse. For it appears by the same Astronomical Tables, that the Full Moon happen'd, at the same Place, in the 1788th Year of the *Julian* Period, or the 2926th before the Christian *Æra*, on *November* 29th about Noon: And so on *December* the 2^d was three Days past the Full; which was then also the 17th Day of the Second Month from the Autumnal Equinox, when the Flood began.

V. The Quantity of Acceleration determin'd *à priori* from the Force of the Comet's Attraction, does very well correspond with that which the present *Elliptick* Orbit does require. Upon Calculation, according to the *Lemma* quoted in the *Lem. 27.* Margin, the Velocity acquir'd by the Earth on *prius.* its first Change, from a Circular to an *Elliptick* Orbit, appears to have been about $\frac{4}{4} \frac{8}{8} \frac{8}{8} \frac{8}{8}$ of the entire Velocity; or such as would carry it in $52 \frac{1}{2}$ Minutes about 468 Miles. 'Tis also upon Calculation evident, from what has been already ob- *Lem. 55.* serv'd, that in case the Comet's nearest Distance *cum Coroll. prius.* were a 24th Part of the Moon's, or 10000 Miles, and it self a little less than a Quarter of the Bigness of the Earth, or about 6 times so big as the Moon; (two very probable and easy *Hypotheses*;) the Time of the Comet's Attraction to be solely consider'd is about 35 Minutes, and the Quantity of Velocity therein produc'd, is the requisite Quantity $\frac{4}{4} \frac{6}{8} \frac{8}{8} \frac{8}{8}$ of the entire Velocity, or so much as carries a Body 468 Miles in the fore-mention'd Space of $52 \frac{1}{2}$ Minutes. And in case the Comet's nearest Distance were more or less, if the Comet withal be supposed in the same Proportion greater or less also; the Effect will be the same, and the fore-mention'd Velocity equal to what the former Calculation assign'd, and the *Elliptick* Orbit of the Earth does exactly require. Which Accuracy of Correspondence, in the due Quantity of Velocity, added to the former Arguments, cannot but be esteem'd a mighty Evidence for the Reality of our *Hypothesis*: All whose Consequents are so surprizingly true, and so fully bear witness to one another,

VI. The

VI. The Quantity of new or foreign Matter, deriv'd from the Comet upon our Earth, must be sufficient to retard the Earth's diurnal Motion in the Proportion of the Lunar Year of 355 Days, 4 Hours, and about 20 Minutes, to the *Antediluvian* one of 360 Days. For seeing the *Antediluvian* Years were just 360 *Antediluvian* Days, and yet equal to only 355 Days, 4 Hours, and about 20 Minutes of our present Days, it is plain, that the additional Waters and Matter, deriv'd from the Comet's Atmosphere and Tail at the Deluge, must have retarded the Earth's diurnal Motion, and so lengthen'd the Day in that Proportion: Which that on an exact Computation it would do, I am now to prove. The Comet, by our present *Hypothesis*, was a little more than a third Part so big as our Earth, or about 6 times as big as the Moon, and came 24 times as near as the Moon; whence the Tide caused by it, would, if the Earth were wholly fluid, and the Comet had been all the while at the nearest Distance, be equal to $24 \times 24 \times 24 \times 6 = 82944$ times as great as that of the Moon with us; which being about 6 Feet above the mean Elevation; this Tide or Elevation of the longest *Semidiameter* above the mean, would be 497664 Feet, or near 100 *English* statute Miles, *i. e.* about the 40th Part of the whole *Semidiameter*. But because the Comet did not stay long enough at the nearest Distance to have its entire Effect, neither would the upper Crust of Earth yield so easily as a Fluid, nor indeed would the utmost Elevation continue at all, but be gradually sinking towards its old Position again; on these Considerations, we need scarcely allow so much as one half of this Elevation at the Time when the Waters

ters lay upon the Face of the Earth; Suppose about 47 Miles, which in this *Hypothesis* is the Elevation of the *Basis* of the *Gordyeen* Mountains themselves, and suppose about 3 for the proper Height of the highest of those Mountains, namely that whereon the Ark rested; so that the Waters might cover the Earth in general about 50 Miles deep one Place with another. I do not mean, that ever they did really at once cover it all so deep together, but that if all which came from the Comet had been kept from running into the open Fissures, as they fell and dispers'd themselves, and if they had been together on the Earth after it was return'd almost to its Spherical Figure again, it would have made an Addition every way of 50 Miles. Now this Addition of Water would retard the Earth's diurnal Motion in a sesquialteral Proportion of its Quantity of Matter compar'd with that of the whole Earth, as we have formerly prov'd, *i. e.* in case Water were as dense as the whole Mass of Earth, one Part with another, in a sesquialteral Proportion of the Cube of 4050 to the Cube of 4000, *i. e.* in the Proportion of 360 to about 340. This would be the Proportion, I say, in case the Density of the whole Earth were no greater than that of Water. But because the Density is certainly somewhat more than four times the Density of Water, as we have formerly observ'd; this Proportion will be reduc'd somewhere nearer than that of 360 to 355, which is the very Proportion of Retardation which we seek for, and which was to be accounted for in this Place. I mean all this, without the Allowance for that Alteration of the Length of the Day, which has arisen from the Inequality of the Influence of the Central Loadstone upon the diurnal Motion of
the

the Earth in the several Ages past; of which at large, in my *Discovery of the Longitude by the Dipping-Needle*, which would require a somewhat lesser Alteration of that Motion of the Deluge by the Cause here assign'd: But because I want sufficient *Data*, to determine the Quantity of the Difference at the Deluge, I let this Calculation stand as before.

Coroll. 1. *Since the Number 360 is not only almost a middle Proportional between the Days in the Solar and Lunar Year; is not only the Number of Degrees in the Ecliptick, and in every Circle or Orbit; but was the just Number of Days in a Year every where before the Flood, and after it also among so many Nations, for so many Ages, as we have seen; The Reason of that Prophetick Style, in which a Day, or Year thereby meant, does signify 360 Days, and no more, is evident. What Difficulties the Want of this Observation, that Daniel's Prophetick Year consisted of 360 Days, has left unsolv'd, and what Light may be afforded to some Places of the highest Importance thereby; I had rather the Reader should be left to his own Observations, and my Lord Bishop of Worcester's Explication of Daniel's 70 Weeks, publish'd in Mr. Marshal's Tables of Chronology, than prepossess him with any more particular Instances thereof in this Place.*

Coroll. 2. *Since the very Day of the Beginning of the Deluge, nearly determin'd by the Place of the Perihelion, and exactly by the Astronomical Tables of the Conjunctions of the Sun and Moon, is the very same individual Day with that mention'd by the sacred Writer, and by Plutarch also; I mean, the 17th Day of the Second Month from the Autumnal Equinox;*

Equinox; hence arises a very surprizing and unexpected Confirmation of the Verity of the Scripture-History. Here is a great and signal Instance of the wonderful Providence of God indeed, and of his Care for the Credit and Establishment of the Holy Books; that he has left us Means sufficient, after above 4000 Years, of examining and ascertaining the Veracity of the most ancient of its Writers, and in one of the most scrupled and exceptionable Points of his Narration, that of the Universal Deluge; and that from unexceptionable Principles, the Astronomical Tables of the Celestial Motions. To how great a Degree this Thing will deserve the most serious Consideration of every one, especially in this our Sceptical Age, I need not determine. The Importance of the Concern, and the Greatness of the Evidence hence afforded, sufficiently enforcing this Point, without any farther Application.

Coroll. 3. Hence the Chronology of the Bible is establish'd, and all the pretended immense Numbers of Years, which some Nations recount, are confuted. For as, the Year of the Deluge from the sacred Chronology being given, the Day of the Beginning of the Deluge therein assign'd is fully attested to, and determin'd on our Hypothesis, from Astronomy; so, vice versa, the Day of the Beginning of the Deluge from the same sacred History being given, (and within a Day or two confirm'd from Plutarch) the Number of Years thereby assign'd is, at the same Time, within some Latitude establish'd also. The Methods before-mention'd of fixing that Day, not permitting the Addition or Subtraction of very many Hundreds, much less of many Thousands of Years, to or from those which the Holy Scripture requires us to account since that Time: Which therefore ought to be fully acquiesc'd in; and all other wild and extravagant Numbers be utterly rejected.

Scholium.

Scholium. Having thus establish'd this main Proposition, 'twill here be proper to describe the particular *Trajectory* of the Comet, or that Part of it which was concern'd with us, and our lower Planetary Regions; which being the very *Trajectory* of the famous Comet delineated by Sir *Isaac Newton*, (which Comet I my self saw when I was young;) I shall here make use of. And because verbal Description in such Cases are of small Advantage, compar'd to Schemes and Graphical Delineations; I shall wave more Words about it, and draw an entire Figure of the same from Sir *Isaac Newton's* Original, for the View and Consideration of the *Reader*.

Fig. 1.

Scholium. If it be expected that I give an Account of the Eccentricity of the *Moon's* Orbit about the Earth, as well as of the Earth's about the Sun from this Account of the Deluge; The Reader is to know, that I rather suppose that Eccentricity to have been occasion'd at the Commencement of the diurnal Rotation, than at the Deluge.



BOOK III.

PHÆNOMENA.

CHAP. I.

Phænomena relating to the Mosaick Creation, and the Original Constitution of the Earth.

I. **A**LL those particular small Bodies of which our habitable Earth is now compos'd, were originally in a mixed, confused, fluid, and uncertain Condition; without any Order or Regularity. It was an *Earth without Form, and void*; had *darkness* spread over the face of its *Abyss*; and in reality was, what it has been ever styl'd, a perfect *Chaos*.

Gen. i. 2.
Grot. Ver.
Rel. Chris.
l. i. § 16.
Burn.
Theor.

The Testimonies for this are so numerous, and the Consent of all Authors, Sacred and Profane, so unanimous, that I need only refer the Reader to them for the undoubted Attestation of it.

l. i. c. 4.
and l. 2.
c. 7, 8.
Arch. l. 2.
c. 1.

II. The Formation of this Earth, or the Change of that *Chaos* into an habitable World; was not a mere Result from any necessary

cessary Laws of *Mechanism* independently on the Divine Power; but was the proper Effect of the Influence and Interposition, and all along under the peculiar Care and Providence of God.

The Testimonies for this are so numerous, and so express, both in the *Mosaick* History it self, in the other Parts of Scripture relating thereto, and in all Antiquity, that I may refer the *Reader* to almost every Place where this Matter is spoken of, without quoting here any Particulars. He who is at all acquainted with the Primitive Histories of this rising World, whether Sacred or Prophane, can have no Reason to make any doubt of it.

III. The Days of the Creation, and that of Rest, had their Beginning in the Evening.

Gen. i. 5, *The Evening and the Morning were the first Day.*
 8, 13, 19, And so of the rest afterward.^a
 23, 31.

IV. At the Time immediately preceding the Six Days Creation, the Face of the *Abyss*, or *superior* Regions of the *Chaos*, were involv'd in a thick Darkness.

Gen. i. 2, *Darkness was upon the face of the Deep.* To which Testimony, the Prophane Traditions do fully agree; as may be seen in the Authors before referr'd to.

V. The visible Part of the first Day's Work, was the Production of Light, or its successive Appearance to all the Parts of the

^a Thales πρὸς τὸ πνιτόθυρον, τὸ πρῶτον ἐγγόνει, νύξ ἡ ἡμέρα. Ἡ νύξ, ἔφη, μὲν ἡμέρα πρῶτον. Diogen. Laert. l. i. Ségm. 36.

Earth; with the consequent Distinction of Darkness and Light, Night and Day upon the Face of it.

God said, Let there be Light; and there was Gen. i. 3.
Light: And God saw the Light, that it was good; 4, 5.
and God divided the Light from the Darkness: And
God called the Light, Day; and the Darkness he cal-
led, Night: And the Evening and the Morning were
the first day.

VI. The visible Part of the Second Day's Work was the Elevation of the Air, with all its contained Vapours; the spreading it for an *Expansion* above the Earth; and the Distinction thence arising of *Superior* and *Inferior* Waters: The former consisting of those Vapours, rais'd and sustain'd by the Air; the latter of such as either were enclosed in the Pores, Interstices and Bowels of the Earth, or lay upon the Surface thereof.

God said, Let there be a firmament, or Expan- y 6, 7, 8.
sum, in the midst of the waters, and let it divide
the waters from the waters. And God made the fir-
ment, and divided the waters which were under
the firmament, from the waters which were above
the firmament: And it was so. And God called the
firmament Heaven. And the Evening and the Morn-
ing were the second day.

VII. The visible Parts of the Third Day's Work were two; the former, the Collection of the *inferior* Waters, or such as were now under the Heaven, into the Seas, with the consequent Appearance of the dry Land; the latter, the Production of Vegetables

out of that Ground so lately become dry.

† 9, 10, 11, 12, 13. God said, *Let the Waters under the Heavens be gathered together unto one place, and let the dry land appear; and it was so. And God called the dry land, Earth; and the gathering together of the Waters called he Seas: And God saw that it was good. And God said, Let the Earth bring forth grass, the herb yielding seed, and the fruit-tree yielding fruit after his kind, whose seed is in it self upon the Earth; and it was so. And the Earth brought forth grass, and herb yielding seed after his kind, and the tree yielding fruit, whose seed was in it self after his kind; and God saw that it was good. And the Evening and the Morning were the third day.*

VIII. The Fourth Day's Work was the placing the Heavenly Bodies, Sun, Moon, and Stars, in the *Expansum* or Firmament, *i. e.* the rendring them visible and conspicuous on the Face of the Earth: Together with their several Affignations to their respective Offices there.

† 14, 15, 16, 17, 18, 19. God said, *Let there be Lights in the Expansum, or, firmament of Heaven, to divide the day from the night; and let them be for signs and for seasons, and for days and years; and let them be for lights in the firmament of Heaven, to give light upon the Earth; and it was so. And God made two great lights; the greater light to rule the day, and the lesser light to rule the night; he made the stars also. And God set them in the firmament of the Heaven, to give light upon the Earth; and to rule over the day, and over the night, and to divide the light from the darkness; and God saw that it was good. And the Evening and the Morning were the fourth day.*

IX. The

IX. The Fifth Day's Work was the Production of Fish and Fowl out of the Waters; with the Benediction bestow'd on them, in order to their Propagation.

God said, Let the waters bring forth abundantly, † 20, 21, the moving creature that hath life, and fowl that 22, 23. may fly above the earth in the open firmament of heaven. And God created great whales, and every living creature that moveth, which the waters brought forth abundantly after their kind; and every winged fowl after his kind; and God saw that it was good. And God blessed them, saying, Be fruitful and multiply, and fill the waters in the seas; and let fowl multiply in the earth. And the Evening and the Morning were the fifth day.

X. The Sixth Day's Work was the Production of all the Terrestrial or Dry-land Animals; and that in a different manner. For the Brute Beasts were produc'd out of the Earth, as the Fish and Fowl had been before out of the Waters: But after that, the Body of *Adam* was form'd of the Dust of the Ground; and by the Breath of Life breath'd into him in a peculiar manner, he became a Living Soul. Some Time after which, on the same Day, he was cast into a deep Sleep, and *Eve* was form'd of a Rib taken from his Side. Together with several other Things, *Hypoth. 3. P. 95, &c. prim.* of which a more particular Account has been already given on another Occasion.

God said, Let the earth bring forth the living, † 24, 25, creature after his kind, cattle and creeping things, 26, 27.

and beast of the earth after his kind; and it was so. And God made the beast of the earth after his kind, and cattle after their kind, and every thing that creepeth upon the earth after his kind; and God saw that it was good. And God said, Let us make Man in our Image, after Our Likeness; and let them have dominion over the fish of the sea, and over the fowl of the air, and over the cattle, and over all the earth, and over every creeping thing that creepeth upon the earth. So God created Man in his own image; in the image of God created he him; Male and Female created he them, &c. Vide ¶ 28, 29, 30, 31. & Cap. II. 7, 15, &c.

XI. God having thus finish'd the Works of Creation, rested on the Seventh Day from the same; and sanctified, or set that Day apart for a Sabbath, or Day of Rest, to be then and afterward observ'd as a Memorial of his Creation of the World in the six foregoing, and his Resting or Keeping a Sabbath on this seventh Day. Which Sabbath was reviv'd, or at least its Observation anew enforc'd on the *Jews*, by the Fourth Commandment.

Gen. ii. 1, 2, 3. *Thus the Heavens and the Earth were finished, and all the host of them: And on the sixth day God ended his work which he had made; and he rested on the seventh day from all his work which he had made. And God blessed the seventh day, and sanctified it, because that in it he had rested from all his work which God created and made.*

Exod. xx. 8, 9, 10, 11. *Remember that thou keep holy the Sabbath-day. Six days shalt thou labour, and do all thy work: But the seventh day is the sabbath of the Lord thy God; in it thou shalt do no manner of work, thou, nor thy son,*

son, nor thy daughter, nor thy man-servant, nor thy maid-servant, nor thy cattel, nor the stranger which is within thy gates : For in six days the Lord made heaven and earth, the sea, and all that in them is, and rested the seventh day; wherefore the Lord blessed the seventh day, and hallowed it.

XII. There is a constant and vigorous Heat diffus'd from the Central towards the Superficiary Parts of our Earth.

Tho' I might bring several Arguments from ancient Tradition, the Opinion of great Philosophers, and the present Observations of Nature for this Assertion; yet I shall chuse here, for Brevity sake, to depend wholly on the last Evidence, and refer the inquisitive Reader to what the Learned Dr. *Woodward* says in the *Essay*, present Case; which I take to be very satisfact^{Part 3.}ory. And indeed, as to this internal Heat it^{§ 1.}self, whether it be allow'd the Origin of Springs or not, (for some deny the latter, and yet assert the former,) it must however be accounted for. And if some may think it more easily ascrib'd to the Mixture of Sulphureous, Nitrous and Mineral Principles, than to a hot central Solid; they must give me leave to dissent from them for these two Reasons; viz. *Because* the Earth, at any great Depth, cannot be probably suppos'd cavernous or hollow enough for the making of such Mixtures; and, *Because* such a Mixture it self supposes that Heat and intestine Motion of Parts as *Causes*, which ought only to be *Effects* thereof. Besides, there is one Argument for the Rise of Springs from this internal Heat, which seems to me unanswerable; viz. That the Springs break forth extraordina- See Mr. Ray's Disc. Edit. 2. P. 109. rily, and run the fastest in a Frost, as they ought to do on this *Hypothesis*, when the Evaporation

or Exit of their Steams in the Form of Vapour, is hinder'd : But which seems impossible, if they only arose from the Current of Vapours in the Air ; those being at that Time certainly at the greatest Rest and Quiet, and also smaller in Quantity than at other Times.

XIII. The Habitable Earth is founded or situate on the Surface of the Waters ; or of a deep and vast subterraneous Fluid.

This Constitution of the Earth is a natural Result from such a *Chaos* as we have already assign'd ; affords Foundation for an easy Account of the Origin of Mountains ; renders the Histories of the several States of the Earth, and of the Universal Deluge very intelligible ; is as Philosophical, and as agreeable to the common *Phænomena* of Nature, as any other. Without this Supposition 'twill be, I believe, impossible to explain what Antiquity, Sacred and Prophane, assures us of relating to the Earth, and its great *Catastrophe* ; but this being allow'd, 'twill not be difficult to account for the same to the greatest Degree of Satisfaction, as will appear in the Progress of the present *Theory*. And, Lastly, The same Assertion is most exactly consonant to, and confirm'd by the Holy Scriptures ; as the following Texts will fairly evince.

Vid. Theor.
l. 1. c. 5.
& 11. &
l. 2. c. 7,
10.

Prov. viii.
27, 28, 29.

*When the Lord prepared the heavens, I was there :
When he set a compass (Circle or Orb) on the face
of the deep : When he established the clouds above ;
when he strengthened the fountains of the deep : When
he gave to the sea his decree, that the waters should
not pass his commandment ; when he appointed the
foundations of the earth.*

He

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He hath founded the earth upon the seas, and established it upon the floods. Pfal. xxiv. 2.

To him that stretched out the earth above the waters: for his mercy endureth for ever. & cxxxvi. 6.

This they willingly are ignorant of, that by the word of God the heavens were of old, and the earth, standing out of the water, and in the water; whereby the world that then was, being overflowed with waters, perished. 2 Pet. iii. 5, 6.

The fountains of the great deep were broken up. Gen. vii.

The fountains of the deep were stopped. 11. & viii. 2.

XIV. The interior or entire Constitution of the Earth is correspondent to that of an Egg.

'Tis very well known, that an Egg was the solemn and remarkable Symbol or Representation of the World among the most venerable Antiquity; and that nothing was more celebrated than the Original *ᾠον Ὀρχήμεον*, *Orphic Egg*, in the most early Authors; which, if extended beyond the Earth, to the System of the Heavens, is groundless and idle; if referr'd to the Figure of the Earth, is directly false; and so is most reasonably to be understood of the entire and internal Constitution thereof. Vid. Theor. l. i. c. 5. & l. 2. c. 10. Lem. 70, & 71. cum Coroll. prius.

XV. The Primitive Earth had Seas and dry Land, distinguish'd from each other in great measure as the present; and those situate in the same Places generally as they still are.

This is put past doubt by Part of the third, the entire fifth, and Part of the sixth Day's Works. One half of the third being spent in distinguishing the Seas from the dry Land; the entire fifth in the Production of Fish and Fowl out of the Waters, and in the assigning the Air to the latter Sort, Gen. i. 9, 10. 20, 21, 22, 23.

¶ 26, 28. Sort, and the Seas to the former, for their respective Elements; and on the sixth, God bestows on Mankind the Dominion of the Inhabitants, as well of the Seas, as of the dry Land. All which can leave no doubt of the Truth of the former Part of this Assertion. And that their Disposition was originally in the main much what it is at present, appears both by the Rivers, *Tigris* and *Euphrates*, running then into the same *Persian Sea* that now they do; and by the Observations of Dr. *Woodward*, fully confirming the same.

Essay, p.
252, 253.

XVI. The Primitive Earth had Springs, Fountains, Streams and Rivers, in the same manner as the present; and for the main, usually in or near the same Places also.

This is but a proper Consequence of the Distinction of the Earth into Seas and dry Land; the latter being uninhabitable without them; and such Vapours as are any way condensed into Water on the higher Parts of the dry Land, naturally descending and hollowing themselves Channels, till they fall into the Seas. However, the other direct Proofs for both Parts of the Assertion, are sufficiently evident.

Prov. viii.
23, 24. *I was set up from everlasting from the beginning, or ever the earth was. When there were no depths, I was brought forth; when there were no fountains abounding with water.*

Gen. ii.
10, &c. *A river went out of Eden, to water the garden; and from thence it was parted, and became into four heads; Pison, Gibon, Tigris, and Euphrates: The two latter of which are well-known Rivers to this very Day, tho' possibly not running in the very same Channels as they did before the Deluge. And the same Thing is confirm'd by Dr. Woodward's Observations.*

Essay,
p. 255.

XVII. The

XVII. The Primitive Earth was distinguish'd into Mountains, Plains, and Vallies, in the same manner, generally speaking, and in the same Places as the present.

This is a natural Consequent of the two former: The Caverns of the Seas, with the extant Parts of the dry Land, being in effect great Vallies and Mountains; and the Origin and Course of Rivers necessarily supposing the same. (For tho' the Earth, in the *Theorist's* way, were oval, which it is not; 'tis demonstrable, there could be no such Descent as the Course of Rivers requires.) However, the direct Proofs are evident.

The Lord possessed me in the beginning of his way, Prov. viii. before his works of old. I was set up from everlast- 22, 23, 25, ing, from the beginning, or ever the earth was. Be- 26. fore the mountains were settled; before the hills was I brought forth: While as yet he had not made the earth, nor the fields, nor the highest part of the dust of the world.

Art thou the first Man that was born? or wast Job xv. 7: thou made before the hills?

Lord, thou hast been our dwelling-place from one Psa. xc. generation to another. Before the mountains were 1, 2. brought forth, or ever thou hadst formed the earth and the world, even from everlasting to everlasting, thou art God. And indeed, these three last Phænomena are in their own Natures so link'd together, they so depend on, and infer one another mutually, that the Proofs of each of them singly may justly be esteem'd under the same Character to both the other; and all of them are thereby establish'd past all rational Contradiction. Of which whole Matter, Dr. Woodward's Observations are a sufficient Attestation also.

Essay, P. 249, 252, 255, 258.

XVIII. The C. 2. 822

XVIII. The Waters of the Seas in the Primitive Earth were *Salt*, and those of the Rivers *Fresh*, as they are at present; and each, as now, were then stor'd with great Plenty of Fish.

This appears from the Difference of the *Species* and Nature of Fishes; some being produc'd and nourish'd by Salt Water, others by Fresh; and yet all created on the fifth Day. And this, in all its Parts, is confirm'd by Dr. *Woodward's* Observations.

Essay,
p. 253,
254, 254.

XIX. The Seas were agitated with a like *Tide*, or *Flux* and *Reflux*, as they are at present.

There is in it self no Reason to doubt of this; and 'tis moreover attested by Dr. *Woodward's* Observations.

Essay,
p. 254.

XX. The Productions of the Primitive Earth, as far as we can guess by the Remainders of them at the Deluge, differ'd little or nothing from those of the present, either in Figure, Magnitude, Texture of Parts, or any correspondent Respect.

This is prov'd by Dr. *Woodward's* Observations.

Essay,
p. 22, 23,
258.

XXI. The Primitive Earth had such *Metals* and *Minerals* in it, as the present has.

In the land of Havilah there was gold; and the gold of that land was good: There was Bdelium, and the Onyx-stone.

Gen. ii.
11, 12.

Tubal-Cain was an instructor of every artificer in brass and iron. Which is withal attested by Dr. *Woodward's* Observation.

Gen. iv. 22.
Essay,
Part 4.
Vid. p.
258, 259.

XXII. Arts

XXII. Arts and Sciences were invented and improv'd in the First Ages of the World, as well as they since have been.

Abel was a keeper of sheep, but Cain was a tiller Gen. iv. 2. of the ground.

Cain builded a city, and called it after the name † 17. of his son Enoch.

Jabal was the father of such as dwell in tents, † 20. and of such as have cattel.

Jubal was the father of all such as handle the harp † 21. and organ.

Tubal-Cain was an instructor of every artificer † 22. in brass and iron. See also the Right Reverend Bishop Patrick, on Gen. iv. 20, 21, 22, 25. and † 18. and Plat. Politic. Operum, pag. 177, A. citat. apud Hypoth. x. p. 172. Nct. (a) prius.

CHAP. II.

Phænomena relating to the Primitive State of the Earth.

XXIII. **T**HE Primitive State of the Earth admitted of the Primary Production of Animals out of the Waters and dry Ground, which the subsequent States, otherwise than in the ordinary Method of Generation, have been incapable of ^b.

^b ΕΕΝ. Καὶ μὲν αὖ τῇ τὴν γε βασιλείαν ἣν ἤρξε Κρόνος, πολλῶν ἀκηκόαμεν. ΣΩ. Πλείστον μὲν ἔν. ΕΕΝ. Τὸ δ', πῶς ἔμπροσθεν φύεσθαι γηγενεῖς, καὶ μὴ ἐξ ἀλλήλων θηυσθεῖς;

Vide Grot. Verit. Rel. Christ. l. i. § 16. Theor. l. i. c. 5. l. 2. c. 7. This appears from the History of the Creation, compar'd with that of Nature ever since. By the former of which, (agreeing with the oldest Traditions) 'tis evident, That the Fishes and Fowls were the immediate Productions or Offspring of the Waters, and the Terrestrial Animals of the dry Land, in the *Primitive State* of the Earth: And by the latter 'tis equally so, that neither of those Elements have afforded the like ever since.

XXIV. The Constitution of Man, in his *Primitive State*, was very different from that ever since the Fall, not only as to the Temper and Perfections of his Soul, but as to the Nature and Disposition of his Body also.

This the whole Drift and *Series* of the sacred History of this *Primitive State* supposes; in which, these two Particulars may here be taken notice of: (1.) Nakedness was ^c no Inconvenience and no Shame, and so no Sense of any need to cover it does appear. Those Inclinations which provide for the Propagation of Mankind, were, it seems, so regular, and so entirely under the Command of Reason, that not so much as an

ΣΩ. Καὶ τὸτο ἐν τῷ πάλαι λεχθέν. Platonis Politicus, pag. 174. G. Edit. Lugdun. 1590.

ΣΩ. Γένεσις δὲ τις τοῦ καὶ ἡ ζῶν; Καὶ τίνα τρόπον ἐξ ἀλλήλων ἐργάζοντο; ΞΕΝ. Δῆλον, ὃ Σώκρατες, ὅτι πρὶν ἐξ ἀλλήλων οὐκ ἦν ἐν τῇ τότε φύσει ἰσχυρόμενον· πρὶν γὰρ γνησίως ἔσθ' ποτε γῆθεν λεχθῆν, τῆς ἦν πρὶν κατ' ἐκείνον τὸ χεῖρον ἐκ γῆς πάλιν ἀναστρεφόμενον. Ibid. pag. 175. E.

Οὐδὲ κλήσεις γυναικῶν καὶ παίδων· ἐκ γῆς γὰρ ἀνεβώσκοντο πάντες. Ibid. pag. 176. A.

^c Γυμνοὶ δὲ καὶ ἀσφατοι θυραυλῆες τὰ πολλὰ ἐνέμοιτο. Τὸ γὰρ τῷ ὥρῳ αὐτοῖς ἄλυτον ἐπέκειντο· μαλακάς δὲ ἐνὰς εἶχον, ἀναφυομένης ἐκ γῆς πᾶς ἀφθόνη. Ibid. pag. 176. A.

Apron

Apron was esteem'd necessary to hide those Parts; which all the World have since thought proper to do. (2.) The Temper of the Human Body was more ^d soft, pliable, and alterable than now it is: Some Sorts of Fruits and Food were capable of causing a mighty Change therein, either to fix and adapt it to its present Condition, or discompose and disorder it; *i. e.* in other Words, either to render it permanent and immortal on the one hand; or to devolve upon it Diseases, Corruption and Mortality, on the other. What concerns the Soul, or its Moral Perfections, is without the Compass of this *Theory*, and not here to be consider'd.

Cap. ii. 9;
16, 19.
and iii. 1,
&c.

XXV. The Female was then very different from what she is now; particularly she was in a State of greater Equality with the Male, and little more subject to Sorrow in the Propagation of Posterity than he.

(1.) Her Names were, as much as possible, the very same with his. The Husband was call'd *Adam*, the Wife *Adamah*; the Husband *Ish*, the Wife *Ishab*. God called their name *Adam*, in the day that they were created. She shall be called *Ishab*, because she was taken out of *Ish*. (2.) We find little to infer any Inequality, or Subjection, till after the Fall. *Adam* said, *This is now bone of my bone, and flesh of my flesh: Therefore shall a man leave his father and his mother, and shall cleave unto his wife; and they shall be one flesh.* Unto the woman God said, (after the Fall) *Thy de-*

Gen. v. 2.
and ii. 23.

Chap. ii.
23, 24.

Chap. iii.
16.

^d Ἡ ἡλικία ἑκάστον εἶχε τὴν ζῶαν, αὐτὴ πρῶτον μὲν ἔσθ' πάντων, καὶ ἐπαύσατο πᾶν ὅσον ἐν θνητῶν, ἐπὶ τὸ γενναϊότερον ἰδεῖν πορφυροῦν, μεταβάλλον δὲ πάλιν ἐπὶ τὸ λευκόν. οἷον νεώτερον καὶ ἀπαλλοττερόν ἐφύετο. Plat. Politic. pag. 175. D.

fire shall be (subject) to thine husband, and he shall rule over thee. (3.) Her Pains in Conception and Childbirth were to be inconsiderable, in Comparison of what they since have been. Unto the woman God said, (after the Fall) *I will greatly multiply thy sorrow, and thy conception; in sorrow thou shalt bring forth children.*

Ibid.

XXVI. The other Terrestrial Animals seem to have been in a State of greater Capacities and Operations; nearer approaching to Reason and Discourse, and Partakers of higher Degrees of Perfection and Happiness, than they have been ever since^c.

Gen. ii.
10.

This appears, (1.) From the Necessity or Occasion of a particular View, and distinct Consideration of each *Species* of Animals, before *Adam* was satisfy'd that none of them were a Helpmeet for him, or suitable to him. (2.) From the *Serpent's* Discourse with' the Woman: In which, to argue from the common Opinion, tho' the *Old serpent, the Devil*, was principally concern'd, yet the

^c Τὸν δὲ βίον, ὃ Σώκρατες, ἀκρίως μὲν τὸ ἔπι Κρόνῳ· τόνδε δ' ὡς λόγῳ ἐπὶ Διὸς ἐῖν τὸ νυνί, πατρὸν αὐτῶν ἡγήσασθαι. Κρίνας δ' αὐτοῖν τὸ εὐδαιμονέστερον ἂν ἂν διώκω τε καὶ ἐθελήσεις; ΣΩ. Οὐδαμῶς. ΖΕΝ. Βέλη δὴτα ἐγὼ σοι τρέποντινὰ ἀφαικίνω; ΣΩ. Πάνυ μὲν οὖν. ΖΕΝ. Ἐν μὲν τοίνυν οἱ τρέφοντες τὸ Κρόνῳ, παρέσθης αὐτοῖς ἔτω πολλὰς χολῆς καὶ διωάμεως πρὸς τὸ μὴ μόνον ἀνθρώποις ἀλλὰ καὶ θηρίοις ἀφ' ὧν λόγων διώκω συγγίνεας, κατεχρῶτο τάτοις σύμπασιν ἐπὶ φιλοσοφίαν, μετὰ τε θηρίων καὶ μετ' ἀλλήλων ὁμιλίαις, καὶ πωπυθιόμοι πρὸς πάσης φύσεως εἰ τινα τις ἰδίαν διώκω ἔχουσα ἥδετό τι ἀφ' ὧν τὸ ἄλλων, εἰς ἀναγυρὸν φρεσίνης· εὐκρίτων ὅτι τὸ νυνί οἱ τότε μετὰ πρὸς εὐδαιμονίαν διέφερον. Ἐν δ' ἐμπιπλάμοι σίτων ἄδην καὶ ποτῶν, διελέγοντο πρὸς ἀλλήλους καὶ τὰ θηρία, μύθους οἶοι δὴ καὶ τανὺν περὶ αὐτῶν λέγον, καὶ τῆτο, ὥστε καὶ τὸ δόξαν ἀποφύγεσθαι, καὶ μάλα εὐκρίτων. Plat. Politic. p. 176. A. B.

partii-

particular *Subtilty of the Serpent* is taken notice of as a means of her Deception, and a Curse denounced and inflicted on the same Beast upon account thereof. *Now the Serpent was more subtil than any beast of the field, which the Lord God had made, &c.* Gen. iii. 1. 2 Cor. xi. I fear lest by any means as the Serpent beguiled Eve ^{3.} through his subtilty. The Lord God said unto the Serpent, *Because thou hast done this, thou art cursed above* ^{14.} *all cattle, and above every beast of the field; upon thy belly shalt thou go, and dust shalt thou eat all the days of thy life.* (3.) From St. Paul's Discourse in the 8th Chapter to the Romans, to argue here also on a common Opinion, *For the earnest expectation of the creature waiteth for the manifestation of the Sons of God. For the creature was made subject to vanity, not willingly, but by reason of him who hath subjected the same in hope: Because the creature it self also shall be delivered from the bondage of corruption, into the glorious liberty of the children of God. For we know that the whole creation groaneth and travelleth in pain together, until now.* Rom. viii. 19, 20, 21, 22.

XXVII. The temper of the Air, where our first Parents liv'd, was warmer, * and the Heat greater before the Fall than after it. * Vid. Plat. Politic. p. 176. A. prius ad Phænom. 24. citat.

This appears, (1.) From the Heat requisite to the Production of Animals, which must have been greater than we are since sensible of. Of which the Wombs wherein the *Fœtus* in *viviparous* Animals do lye, and the warm brooding of the *Oviparous*, with the hatching of Eggs in Ovens are good evidence. (2.) From the Nakedness of our first Parents. (3.) From that peculiarly warm Cloathing they immediately stood in need of afterwards, the Skins of Animals. *Unto Adam also, (after the Fall) and to his* ^{Chap. iii. 21.}

his Wife, did the Lord make Coats of Skins, and cloathed them.

XXVIII. Those Regions of the Earth where our first Parents were plac'd, were productive of better and more useful Vegetables, with less Labour and Tillage than they have been since^f.

Gen. ii. 15. *The Lord God took the Man, and put him into the Garden of Eden to dress it, and to keep it; (before the Fall.)*

Chap. iii. *The Lord God said unto Adam, (after the Fall)*
17, 18, 19. *Cursed is the ground for thy sake; in Sorrow shalt thou eat of it all the days of thy life. Thorns also and Thistles shall it bring forth to thee, and thou shalt eat the Herb of the Field. In the Sweat of thy Face shalt thou eat Bread, till thou return unto the Ground, for out of it wast thou taken.*

XXIX. The *Primitive* Earth was not equally Paradisiacal all over. The Garden of *Eden* or *Paradise* being a peculiarly fruitful and happy Soil, and particularly furnish'd with the Necessaries and Delights of an innocent and blessed Life, above the other Regions of the Earth.

Gen. ii. 8, 9. *The Lord God planted a Garden Eastward in Eden, and there he put the man whom he had*

^f Καρπὸς ὃ ἀφθόνος εἶχον ἀπὸ τε δρυῶν καὶ πολλῆς ὕλης ἄλλης, ἐχ' ὑπο γαργήνας φυομένης, ἀλλ' αὐτομάτης ἀναδιδέσης τ' γῆς. Γυμνοὶ δ' καὶ ἄσρωτοι θυραυλιῶντες τὰ πολλὰ ἐνέμοντο. Τὸ γὰρ τῶν ὡρῶν αὐτοῖς ἄλυπον ἐνέκρατο· μαλακὰς δ' ἐβλάς εἶχον, ἀναφυομένης ἐν γῆς πώας ἀφθόνῃ. Plat. Politic. pag. 176. A.

Ὁ δ' ἦρεν παρ' Ἐπὶ πάντεσσι αὐτόματι γίνεσθαι τοῖς ἀνθρώποις, ἥμισυ τ' νῦν ἐστὶ καθεστηκυίας φορέας, ἀλλ' ἦν καὶ τὸ τοῦ τ' ἐμπροσθεν. Vid. pag. 175. G.

formed: And out of the Ground made the Lord God to grow every tree that is pleasant to the sight, and good for food; the tree of life also in the midst of the Garden, and the tree of Knowledge of good and evil.

The Lord God sent the Man forth from the Garden of Eden to till the Ground from whence he was taken: So he drove out the Man. Chap. iii. 23, 24.

XXX. The ancient Paradise or Garden of *Eden*, the Seat of our first Parents in the State of Innocence, was about the North-West Bounds of *Assyria*, at the Rivers *Tigris* and *Euphrates*: (for their *Antediluvian* Streams seem to have been united before they were come so far as *Assyria*;) a little below which place they were parted into four Branches, and so ran into the great *Southern* Ocean called by the Ancients the *Red-Sea*, at four Out-lets at no small distance from one another.

Of this see the fourth *Hypothesis* before laid down.

XXXI. The Earth in its *Primitive* State had only an *Annual* Motion about the Sun: But since, it has a *Diurnal* Rotation upon its own *Axis* also: Whereby a vast difference arises in the several States of the World.

Of this, with its necessary consequents, see the third *Hypothesis* before laid down. Nay *Plato* will give us account of more Mutations than are there mention'd; Earthquakes and Destruction of Animals at first, till afterwards all went on

again in due order. Which are not hard to be solv'd on the present *Hypothesis* 8.

XXXII. Upon the first commencing of this *Diurnal* Rotation after the Fall, its *Axis* was oblique to the Plane of the *Ecliptick* as it still is: Or in other Words, the present *Vicissitudes* of Season, *Spring*, *Summer*, *Autumn*, and *Winter*, arising from the Sun's Access to, and Recess from the *Tropicks*, have been ever since the Fall of Man.

Gen. i. 14. God said, on the fourth Day, *Let there be lights in the Firmament of the Heaven, to divide the Day from the Night*; which was their proper Office till the Fall. *And let them be, ever after, for Signs, and for Seasons, and for Days, and Years.* After the Flood, *While the Earth remaineth, Seed-time and Harvest, and Cold and Heat, and Summer and Winter, and Day and Night shall not cease.* Implying, that tho' the

Chap. viii.
ult.

ε'ο ὃ [κόσμου] μεταστροφῶν καὶ συμβάλλων, ἀρχῆς τε καὶ τελευτῆς ἐναντίον ὁρμῶν ὁρμηθεὶς, σεισμὸν πολὺν ἐν ἑαυτῷ ποιῶν, ἄλλω αὖ φθορὰν ζώων παντοίων ἀπειργάσατο. Μετὰ δὲ ταῦτα, προσελθόντων ἱκανῶν χρόνων, θορύβῳ τε καὶ ταρχῆς ἤδη παυομένων καὶ τῷ σεισμῷ, γαλήνης ἐπιλαβόμενος, εἰς τε τὸ εἰωθότα δρόμον τὸ ἑαυτὴν κατακοσμήσκειν ἦεν, &c. Plat. Polit. 176. D. Vide &c pag. 175. C.

Στρεφθέντος γὰρ αὖ τῷ κόσμῳ ἢ ἐπὶ τὸ νῦν χρόνῳ ὁδῶν, τὸ τῷ ἡλικίας αὖ πάλιν ἴσατο, καὶ καινὰ τὰναντία ἀπέδιδε τοῖς τότε. Ibid. pag. 176. F.

Τῆς γὰρ τῷ κεκλιμῆος καὶ κίμωνος ἡμᾶς δαίμων ἀπερημαθῆναις ἐπιμελείας, τῷ πολλῶν αὖ θηρίων, ὅσα χαλεπὰ τὰς φύσεις ἦν, ἀπαγεωθῆναι, αὐτοὶ δὲ ἀόθεντες ἄνθρωποι καὶ ἀφύλακτοι γεγονότες, διτρεπάζοντο ὑπὸ αὐτῶν, καὶ ἐτ' ἀμήχανοι καὶ ἀτεχνοὶ καὶ τὰς πρώτας ἡσαν χρόνους, ἅτε τῷ αὐτομάτης τευχῆς ἐπιλελοιπύας, πορεύεσθαι ὃ σὺ ἐπιστάμενός πω, ἀλλὰ τὸ μηδεμίαν αὐτὰς χρῆσαν πρότερον ἀναγκάζειν. Ἐκ τούτων πάντων ἐν μεγάλας ἀπείρας ἦσαν. Ibid. pag. 177. A.

Seasons,

Seasons, as well as Night and Day, had been, during the Deluge, scarcely distinguishable from one another; yet the former as well as the latter Distinction had been in Nature before: And surely the Spring, Summer, Autumn and Winter, with their Varieties of Cold and Heat, Seed-time and Harvest, were no more originally begun after the Deluge, than the Succession of Day and Night mention'd here together with them is by any suppos'd to have been. But of this we have at large discours'd under the third *Hypothesis* foregoing already; to which the Reader is farther referr'd for Satisfaction.

XXXIII. Since the Commencing of this diurnal Rotation, the inward and central Parts have not revolv'd quite so fast as the outward and superficial.

This appears by what has been said under the III^d *Hypothesis* already.

XXXIV. As a Consequence of the former it appears that the Cause of the diurnal Rotation was some Force impress'd on the outward and superficial Parts, and thence communicated to the inward.

This appears from the same III^d *Hypothesis*.

CHAP. III.

Phænomena relating to the Antediluvian State of the Earth.

XXXV. **T**HE Inhabitants of the Earth were before the Flood vastly more numerous than the present Earth either actually does, or perhaps is capable to contain and supply.

In order to the Proof of this Assertion, I observe, (1.) That the Posterity of Each Generation of the *Antediluvians*, is to be suppos'd much more numerous than of any since, because their Lives were much longer. This is but agreeable to the sacred History, in which we find two at sixty five, and one at seventy Years of Age to have begotten Children: While the three Sons of *Noah* were not begotten till after their Father's five hundredth year: Whereas yet at the same time the several Children of the same Father appear to have succeeded as quickly one after another as they usually do at this Day. For as to *Cain* and *Abel*, they appear to have been pretty near of an Age, the World being at the Death of the latter, not without considerable numbers of People, tho' their Father *Adam* was not then an hundred and thirty Years old; and so in Probability contain'd many of the Posterity of both of them. (Which by the way fully establishes the early begetting of Children just now observ'd in the *Antediluvian* Patriarchs, and if rightly consider'd, overturns a main Argument for the *Septuagint's* Addition of so many Centenaries

Gen. v. 15,

21.

y 12.

y 32.

Gen. iv.

14, 15.

with 25.

vid. Cap.

vii. 13.

with v. 31.

ries

ries in the Generations before the Deluge.)

And as to the three Sons of *Noah*, born after the five hundredth Year of their Father's Life,

Gen. v. 32.

& vii. 11.

'tis evident that two of them at the least, *Japhet*

& viii. 13.

and *Shem*, were born within two Years one after another.

wish xi. 10.

All which makes it highly reasonable to suppose, that since the Lives of the Antediluvians were much longer, their Posterity must have been much more numerous than that of the Postdiluvians. (2.) The Lives of the Antediluvians being pretty evenly prolong'd without that mighty inequality in the Periods of human Life, which we now experience, and commonly amounting to 800 Years at the least, whereas the Modern Age of Men at the utmost is not 80, the proportion between the Lives of the Antediluvians and those of the Postdiluvians, must at least be taken as about 10 to 1.

And accordingly in any long space, the Antediluvians must double themselves at the least, in about the tenth part of the time in which they now double themselves. (3.) On account of the *Co-existence* of so many of such Generations as are but successive with us, we must allow the Antediluvian number of the present Inhabitants to have been so much greater than it would otherwise have been, as to supply any defect which might arise from any other Circumstances not here particularly consider'd; so

See Sir

Will. Pet-

ty's Essay

on the Mul-

tiplication

of Man-

kind: And

Philos.

Transact.

N. 196. p.

that on all accounts the before-mention'd proportion for the doubling themselves ought to be esteem'd a very fair and moderate one in this case; which *Præcognita* suppos'd, in order to the proof of this Assertion I observe, that 'tis now generally own'd, and this from good Observations, that Mankind do double themselves in about 360 or 370 Years; or, allowance being made for

597, &c.

all but very uncommon, and very rare Cases of general Wars, Famines, Plagues and such like sweeping Desolations, in about 400 Years; which therefore is to be suppos'd the Proportion ever since the present Period of human Life was fix'd in the Days of *David*. 'Tis also evident that from the Creation to the Deluge, the Lives of Men were at the least ten times as long as they have been in these latter Ages of the World, as was just now observ'd; 'tis therefore evident that the Period for the Doubling of Mankind, from the Creation till the Deluge, must have been about ten times shorter than that which has of late obtain'd in the World, by reason of their ancient longer Lives in that proportion; so that if we have a *Series* of 40 Numbers beginning at 2 (for so many God created himself at first;) and doubling themselves in 40, or for convenience 41 Years in a mean, or one Age with another till the Deluge, *i. e.* for about 1556 or 1656 Years, we shall in some degree obtain the sum total of Mankind at the Deluge, and also in the several Ages before that time. (Tho' still this Period of doubling, must have been much *shorter* and *longer* in the *earliest* and *latest* times of the said Interval.) Which Computation take in the following Table.

Number of Mankind.	Years of the World.	Years of Doubling.	Series.
4	2	2	1
8	6	4	2
16	12	6	3
32	20	8	4
64	30	10	5
128	42	12	6
256	56	14	7
512	72	16	8
1024	90	18	9
2048	110	20	10
4096	132	22	11
8192	156	24	12
16,385	182	26	13
32,768	210	28	14
65,536	240	30	15
131,072	272	32	16
262,144	306	34	17
524,288	342	36	18
1,048,576	380	38	19
2,097,152	420	40	20
4,194,304	462	42	21
8,388,608	506	44	22
16,777,216	552	46	23
33,554,432	600	48	24
67,108,864	650	50	25
134,217,728	702	52	26
268,435,456	756	54	27
536,870,912	812	56	28
1,073,741,824	870	58	29
2,147,483,648	930	60	30
4,294,967,296	992	62	31
8,589,924,592	1056	64	32
17,179,869,184	1122	66	33
34,359,738,368	1190	68	34
68,719,476,736	1260	70	35
137,438,953,472	1332	72	36
274,877,906,944	1406	74	37
549,755,813,888	1482	76	38

From

From which Computation it is evident that the Number of the Antediluvians before the Deluge would easily amount to above 500,000 Millions, *i. e.* to 100 times as many as our present Earth has in all Probability now upon it; and indeed to 10 times so many as the present Earth can well be suppos'd capable of maintaining in its present Constitution since the Deluge. And that this vast number may not seem at all incredible, nor to be only built on precarious and imaginary Suppositions, I shall farther shew from a known Instance, built on matter of Fact, that the Antediluvians might easily be rather more than fewer in number than those assign'd in the foregoing Computation. For 'tis evident from

Exod. xii.
37.
Numb. i.
45, 46.

the sacred History, and not to be denied by those who forsake the *Hebrew* Chronology themselves, or who would lessen the numbers of the Antediluvians; That in the Space of about two hundred sixty six Years, the Posterity of *Jacob* alone, by his Sons, (without the Consideration of *Dinah* his Daughter) amounted to six hundred thousand Males above the Age of Twenty, all able to go forth to War. Now by Mr. *Graunt's* Observations on the Bills of Mortality it appears that about $\frac{34}{100}$ are between the Ages of

Pag. 85.

sixteen and fifty six: Which may be near the Proportion of the *Males* numbred, to the entire Number of them all. So that as thirty four to an hundred, by the Golden Rule, must six hundred thousand be to the entire Number of the Males of *Israel* at that time: Which was therefore one Million seven hundred sixty four thousand and seven hundred. To which add *Females*,

Pag. 104.

Num. iii.
39.

near $\frac{1}{10}$ fewer, as suppose, to make the Sum even, one Million six hundred thirty five thousand, three hundred, the *Total* is, three Millions

Millions, and four hundred thousand; add forty Num. i. three thousand for the *Levites*, (not included in 47, 48, 49. the former accounts,) the entire Sum will at last amount to three Millions, and four hundred forty three thousand Souls. Now if we suppose the Increase of the Children of *Israel* to have been gradual, and proportionable through the whole two hundred sixty six Years, it will appear that they doubled themselves every fourteen Years at least; which Proportion, if we should continue it through the entire hundred and fourteen Periods, (which the space from the Creation to the Deluge admits) the product or number of People on the Face of the Earth at the Deluge would be at least the hundredth in a Geometrick double Proportion, or *Series* of numbers, two, four, eight, sixteen, &c. where every succeeding one were double to that before it: Which to how immense a Sum it would arise, those who know any thing of the nature of Geometrick Progressions will easily pronounce, and may be soon tried by any ordinary Arithmetician. So that if the Antediluvians had only multiplied as fast before, as 'tis certain the *Israelites* did since the Flood for the assigned term; the numbers of Mankind actually Alive and *Co-existing* at the Deluge, must have been, not only more than the Earth now does or possibly could maintain, but prodigiously more than the whole number of Mankind can be justly suppos'd ever since the Deluge; nay indeed, with any degree of likelihood, ever since the Creation of the World. On which Account this Calculation must not be at all esteem'd a real one, or to exhibit in any measure the just Number of the Posterity of *Adam* alive at the universal Deluge. However, this Calculation serves to shew how vastly numerous, according to the

the regular Method of human Propagation, the Offspring of a single Person may certainly be ; and this on a Calculation from undoubted matter of Fact, not from a meer possible Hypothesis, (according to which Numbers prodigiously greater would still arise :) It demonstrates the Probability, if not Certainty, of Mankind's Original from a common Head as well before as since the Deluge, and that within a few Millenaries of Years : It, lastly, is more than sufficient to demonstrate the Proposition we are upon, that the whole Earth must have been peopled long before the Flood, and at its Approach have contain'd considerably more in Number than the present does.

Scholium. Since we have here suppos'd that the general Standard for the doubling of Mankind in these latter Ages of the World is about 400 Years, allowance being therein made for all but very uncommon and very rare Cases of general Wars, Famines, Plagues, and such like sweeping Desolations ; and since we have also suppos'd that the Period of Doubling must still be so much shorter, as the Lives of Men in different Ages appear to be longer, it will be proper and useful in this Place to examine this Matter a little farther, and to confirm both parts of the present *Hypothesis* by comparing it with the utmost ancient and authentick, nay indeed, with the only ancient and authentick Account of this Matter we have in the World ; and that is with the time of Doubling among the Children of *Israel* from their Entrance into the Land of *Canaan*, till the Time of King *David* ; at both which Points of Time their Numbers were exactly taken, and are as exactly recorded in the sacred Scriptures. The whole
Number

Number of the Children of *Israel* (excepting the Tribes of *Levi* and *Benjamin*, which were not numbred by *Joab* the second Time) above 20 Years old, counting only the Males, just before their entring into the Land of *Canaan* was Numb. 556,130. Between this Time of the numbring xxvi. 41, by *Moses* and that by *David* there were about 51. 430 Years. The usual Period of Human Life in a mean was then at the least longer than the present, in the Proportion of 100 to 75, or 4 to 3, as will easily appear by the Table of the Postdiluvian Lives to be hereafter given; so that if 400 Phænom. Years be the Period of Doubling with us, 300 Years 71. infra. must have been the Period of Doubling in the Interval we now speak of. Say therefore by the Rule of Three, If three hundred Years double the People, or produce 1,112,260 of Males above 20 Years of Age, how many by a proportionable Increase will 430 Years produce? The Product whereof is 1,594,236, or in a round Number 1,600,000, which therefore, according to the fore-mention'd rate, ought to be the Number of the *Israelites* at the Time when *David* numbred them about 430 Years afterward. Now the Number of the *Israelites* taken by *Joab* was expressly 2 Sam. 800,000 valiant Men that drew the Sword. Besides which there were 12 Companies of 24,000 Be-xxiv. 9. 1 Chron. xxvii. 1. Men apiece already number'd and enroll'd, to wait by turns on the King in the 12 Months of the Year: Which are therefore 288,000. So that the total Number of the Men of all *Israel* 1 Chron. was 1,088,000, or in a round Number 1,100,000 xxi. 5. Men: as 'tis expressly in the Book of *Chronicles*. Ibid. To which add the Men of *Judah* 470,000; or in a round Number, as the Second Book of *Samuel* has it, whether including or not the small 2 Sam. xxiv. 9. Tribe of *Benjamin* does not appear, 500,000 Men.

Men. And so at last the total Sum is in a round Number 1,600,000 Men, which is the very same Number with the former produc'd by the Arithmetical Calculation above, and so highly worthy of our Regard and Admiration. We may therefore, upon the whole matter, reasonably conclude that, excepting only what Disturbance very rare and very uncommon Wars, Famines, Plagues and such other merciless destroyers of Men have given thereto, Mankind have generally increas'd in nearly the same determinate Proportion, and doubled themselves in 400 Years or thereabout for this 2,700 Years, since the fixing the present Period of Human Life in the Days of *David*; and that in the former Ages the Period for such their doubling was still about so much shorter as their Lives were longer than that common Standard which has obtain'd in these latter Ages of the World: Upon which *Hypothesis* all the Computations of this Nature are by me built, and are, as far as appears, very agreeable to all the ancient Histories of Mankind.

Gen. xii. 2.

& xiii. 16.

& xv. 5.

& xvii. 2,

4, 5, 6.

& xxii. 17.

& xxvi. 4.

& xxviii.

14. &

xxxii. 12.

Exod. i.

7, 9. &

xxxii. 13.

Numb.

xxiii. 10.

Deut. i. 10,

11. Isa.

xlvi. 19.

Jer. xxxiii.

22. Heb.

xi. 12.

Ezek. xvi.

7.

5

Corollary. *The Increase of the Children of Israel, during their abode in the Land of Egypt, was extraordinary, and very much quicker than the common rate of the Increase of Mankind in those Ages, nay than their own Increase afterwards; and was no other than a signal and remarkable fulfilling of those many Promises God had made to their Forefathers, concerning such their vast Multiplication and Increase, till by their frequent Murmurings, Disobedience, Idolatry, and Wickedness in the Wilderness and in the Land of Canaan, He took away his extraordinary Blessing from them, and left them to the common and usual Course of Nature ever afterwards. For though, as Sir William Petty has observ'd, in his small but excellent Essay, concerning the*

the Multiplication of Mankind, The time of doubling without a Miracle might possibly be no longer than the space of 10 Years, according to the present Observations in some particular Families, even considering the shortness of the Period of Human Life now; and so at the time of the Egyptian Bondage might possibly have been still almost as short again, because their Lives were then almost as long again; yet, as he also observes, the Increase of Mankind in general, or of any considerable Number of Families together, has not actually been any where so great as to double it self in less than 120 Years time: Which is much the same as if the Israelites had doubled themselves in 60 or 70 Years only; whereas if we compute the Increase of the Israelites from those 70 Souls which came into Egypt till they became in all at their Exodus near three Millions and an half, i. e. in about 215 Years space, We shall find that they all along in a mean doubled themselves in 15 Years time; which very short Period of doubling, and the prodigious Increase thence arising, tho' it be by no means properly miraculous, yet was very unusual and extraordinary; and a most eminent instance of the peculiar Blessing and Providence of God towards that Nation, and of the fulfilling of his ancient Promises made to that People.

Coroll. 2. Since therefore the vast numbers of the Jews at the destruction of Jerusalem by Titus, and afterwards in the Days of Trajan and Adrian, notwithstanding the return of only a part of that People, after the Babylonish Captivity, attested to by all the profane Historians, does fully confirm and justify the sacred Accounts of their Numbers in the elder Days of David and Moses, It is certain that there was a peculiar Providence toward that Nation from the eldest times of it, and such an one as is wholly unexampled among all the rest of the Nations of the Earth.

XXXVI. The Brute Animals whether belonging to the Water or Land, were, proportionably at least, more in number before the Flood than they are since.

This is I think generally look'd upon as no other than a reasonable Deduction from the last Proposition; and is very fully attested by Dr. Essay, p. 257, 258. *Woodward's* Observations, as far as the Remains of those Ages afford any means of knowing the same; and so ought in reason to be universally allow'd.

XXXVII. The *Antediluvian* Earth was much more fruitful than the present; and the multitude of its vegetable Productions much greater.

This is both necessary to be allow'd by reason of the Multitude of its Inhabitants, rational and irrational, maintained by them; of which before: And abundantly confirm'd also by Dr. Essay, p. 254, &c. & 257, 258. *Woodward's* Observations.

XXXVIII. The Temperature of the *Antediluvian* Air was more equable as to its different Climates, and its different Seasons; without such excessive, and sudden heat and cold; without the scorching of a *Torrid Zone*, and of burning Summers; or the freezing of the *Frigid Zones*, and of piercing Winters; and without such sudden and violent Changes in the Climates or Seasons from one extreme to another, as the present Air, to our Sorrow, is subject to.

Theor. 1. 2. c. 1. & 10. Archæol. 1. 2. c. 5. & 6.

These Characters are extremely agreeable to, and attested by, the ancient Accounts of the Golden

Golden Age. The Gentleness of the *Torrid* and *Frigid Zones* is necessary to be suppos'd in order to the easy Peopling of the World, with the Dispersion and Maintenance of those numerous Inhabitants we before prov'd it to have contain'd: Which, if they were as now they are, would be very difficultly accountable. The Gentleness of Summer and Winter, with the easy and gradual coming on, and going off of the same Seasons, are but necessary in order to the very long Lives of the Antediluvians; which else 'twere not so easy to account for. And indeed the most of those Testimonies which have been suppos'd favourable to a perpetual Equinox before the Deluge, are resolv'd into this Proposition; and if it can be separately establish'd, need not to be extended any farther.

XXXIX. The Constitution of the Antediluvian Air was Thin, Pure, Subtile and Homogeneous; without such gross Steams, Exhalations, Nitrosulphureous, or other Heterogeneous Mixtures, as occasion Corruptions, Meteors, Thunder, Lightning, Contagions, and Pestilential Infections, in our present Air; and have so very pernicious and fatal (tho' sometimes almost insensible) Effects in the World since the Deluge.

This is the natural Consequent, or rather Original, of the before-mention'd Equability and Uniformity of the Antediluvian Air: This must be suppos'd on the account of the *Longævity* of the Inhabitants: And this is very agreeable to the last cited Descriptions of the Golden Age. The contrary Heterogeneous and gross Atmosphere,

which now encompasses the Earth, is disagreeable to a regular State, (which an original Formation from the Chaos supposes,) as containing such dense and bulky Exhalations, and Masses, which at first must have obtain'd a lower Situation, and were not to be sustain'd by the primitive thin and subtle Air or *Æther*. Such Mixtures as this Proposition takes notice of, or those Effects of them therein mention'd, have no Footsteps in Sacred or Prophane Antiquity, relating to the first Ages of the World; there is no Appearance of them in the serene and pellucid Air of the Moon, or of the Generality of the heavenly Bodies, and so there can be little reason to ascribe them to the Antediluvian State.

XL. The Antediluvian Air had no large, gross Masses of Vapours, or Clouds, hanging for long Seasons in the same. It had no great round Drops of Rain, descending in Multitudes together, which we call Showers: But the Ground was watered by gentle Mists or Vapours ascending in the Day, and descending in great measure again in the succeeding Night. *

* Vid. Hugen. verba
ad Phænomen.
45. citanda.

Theor.
l. 2. c. 1.

This Assertion is but a proper Consequent of such a pure, thin, rare *Æther* as originally encompass'd the Earth. 'Tis very agreeable to the Descriptions of the Golden Age, and to the present *Phænomena* of most of the Planets (especially of the Moon, whose Face, tho' so near us, is never obscur'd or clouded from us.) 'Tis necessary to be suppos'd in an Air without a Rainbow, as the Antediluvian was; (of which presently;) and is indeed no other than the Words of the sacred History informs us of.

Chap. III. *PHÆNOMENA.* 259

The Lord God had not caused it to rain upon the Earth, ——— But there went up a Mist from the Earth, and watered the whole Face of the Ground. Gen. ii. 5, 6.

The Clouds indeed are mention'd by Wisdom Prov. viii. in the Book of *Proverbs* as Coeval with the Creation, which seems to contradict this *Phænomenon*. But if we consider that in the first Constitution of the *Expansum* or Firmament on the second Day of the Hexaemeron there would be Clouds, and those probably thicker and denser than ever since; and that during the greatest part of 9 or 10 Months Space together, tho' after the clearing up of the Air on the fourth Day they would return no more, as will be easily understood hereafter; it will appear that the present *Phænomenon*, in the just Sense here intended, is still very true, and not at all disagreeable to the sacred Scriptures.

XLI. The Antediluvian Air was free from violent Winds, Storms, and Agitations, with all their Effects on the Earth or Seas, which we cannot now but be sufficiently sensible of.

This the foregoing *Phænomena* enforce: So homogeneous, pure, and unmix'd a Fluid, as that Air has been describ'd to have been, by no means seeming capable of exciting in it self, or undergoing any such disorderly Commotions or Fermentations. Where no Vapours were collected into Clouds, there must have been no Winds to collect them; where the Climates preserv'd their own proper Temperature, no Storms must have hurried the Air from colder to hotter, or from hotter to colder Regions; where was no Rainbow, there must have been no driving together the separate Vapours into larger Globules

or round Drops of Rain, the immediate requi-
 Vid. Phæ- site thereto. This is also highly probable by
 nom. 55. reason of the perpetual Tranquillity of the Air
 infra. for the first five entire Months of the Deluge, (as
 will be prov'd anon,) which is scarce supposable
 if Storms and Tempests were usual before.

XLII. The Antediluvian Air had no Rain-
 bow; as the present so frequently has.

Gen. ix. God said, (after the Deluge) *This is the token*
 12, 13, 14, *of the Covenant which I make between me and you,*
 15, 16, 17, *and every living Creature that is with you, for per-*
 Vid. Theor. *petual Generations. I do set my Bow in the Cloud;*
 l. 2. c. 5. *and it shall be for a Token of a Covenant between me*
and the Earth. And it shall come to pass when I
bring a Cloud over the Earth, that the Bow shall
be seen in the Cloud. And I will remember my Co-
venant, which is between me and you, and every
living Creature of all Flesh; and the Waters shall
no more become a Flood to destroy all Flesh. And the
Bow shall be in the Cloud, and I will look upon it,
that I may remember the everlasting Covenant be-
tween God and every living Creature of all Flesh
that is upon the Earth. And God said unto Noah,
This is the Token of the Covenant, which I have
establis'd between me and all Flesh that is upon the
Earth.

XLIII. The Antediluvians might only eat
 Vegetables; but the Use of Flesh after the
 Flood was freely allow'd also.

Gen. i. 29, God said, (to our first Parents in Paradise) *Be-*
 30. *hold I have given you every Herb, bearing Seed,*
which is upon the face of all the Earth; and every
Tree, in the which is the Fruit of a Tree yielding Seed,
to you it shall be for Meat; and to every beast of the
Earth,

Earth, and to every Fowl of the Air, and to every thing that creepeth upon the Earth wherein there is life; I have given every green Herb for Meat: And it was so.

God blessed Noah and his Sons, (after the Flood) Chap. ix. and said unto them, Be fruitful and multiply, and ^{1, 2, 3.} replenish the Earth. And the fear of you, and the dread of you shall be upon every Beast of the Earth, and upon every Fowl of the Air, upon all that moveth upon the Earth, and upon all the Fishes of the Sea; into your hand are they deliver'd. Every moving thing that liveth shall be Meat for you; even as the green Herb have I given you all things. To which when the Prince of Latin Poets so exactly agrees, let us for once hear him in the present case.

*Ante etiam sceptrum Dictæi Regis, & ante
Impia quam cæsis gens est epulata juvencis,
Aureus hanc vitam in terris Saturnus agebat.*

Virgil.
Georg.
lib. 2. sub
calce.

XLIV. The Lives of the Antediluvians were more universally equal, and vastly longer than ours now are: Men before the Flood frequently approaching near to a thousand, which almost none now do to a hundred Years of Age.

This is both fully attested by the most ancient Remainers of prophane Antiquity, and will be put past doubt hereafter by a Table of the Ages of the Antediluvians, out of the fifth Chapter of Genesis. *Semotique prius tarda necessitas Leti corripuit gradum.* Grot. ubi supra. Theor. l. 2. c. 3. Hor. Ode 3.

XLV. Though the Antediluvian Earth was not destitute of lesser Seas and Lakes, every where dispers'd on the Surface there-

of; yet had it no *Ocean*, or large Receptacle of Waters, separating one Continent from another, and covering so large a Portion of it, as the present Earth has ^h.

vid. etiam
Coroll. 2.
Solut. 7.
infra.
Archæol.
p. 241.
Theor.
l. 1. c. 6.

This is evident, Because (1.) the Number of the Antediluvians before assign'd, must have been too numerous for the Continents alone to maintain. (2.) That famous Tradition among the Ancients of the drowning a certain vast Continent call'd *Allantis*, bigger than *Africa* and *Asia*, seems to be a kind of Relique of the Generation of the Ocean at the Deluge, and consequently of that Antediluvian State, where the greatest part of what the Ocean now possesses was dry Land, and inhabited as well as the rest of the Globe. (3.) The Generation of the Ocean, with the Situation of the present great Continents of the Earth will be so naturally and exactly accounted for at the Deluge, that when that is understood, there will remain to those who are satisfied with the other Conclusions, small reason to doubt of the Truth of this before us, (4.) The Testimony of *Josephus* (if the *Theorist* hit upon his true Sense) is agreeable, who says, At the Deluge God *Ἐἰς θάλασσαν ἡ ἥπειρον μετέβαλε*; *chang'd the*

Theor.
l. 2. c. 10.
p. 280.

Continent into Sea,

^h Nam neque apud nos nisi summa maris superficie ac tenui veluti pellicula opus esset ad humorem terris satisque suppeditandum quem solis vis eliciisset; quique in rorem tantum, non vero in nubes condensaretur. *Hugen. Cosmotheor.*
p. 117.

CHAP. IV.

Phænomena relating to the Universal Deluge, and its Effects upon the Earth.

XLVI. **I**N the Sixteenth or Seventeenth Century from the Creation, there happen'd a most extraordinary and prodigious Deluge of Waters upon the Earth.

This general Assertion is not only attested by a large and special Account of it in the sacred Writings, but by the universal Consent of the most ancient Records of all Nations besides, as may be seen in the Authors quoted in the Margin; and is put moreover past doubt by Dr. Woodward's Natural Observations *.

Grot. ubi supra.
Bp. Stillingfleet's Orig. l. 3. c. 4.
Edward's Authority of Script. p. 118. &c.
And Commentators on Gen. vi, and vii.

XLVII. This prodigious Deluge of Waters was in part occasion'd by a most extraordinary and violent Rain, for the space of forty Days, and as many Nights, without Intermission.

* Essay, Pref. and Part 3. § 2.

Yet seven Days, and I will cause it to rain upon the Earth forty Days and forty Nights.

Gen. vii. 4.

The Windows of heaven were opened, and the rain was upon the Earth forty Days and forty Nights.

† 11, 12.

And the Flood was forty Days upon the Earth.

† 17.

XLVIII. This vast quantity of Waters was not deriv'd from the Earth or Seas, as Rains constantly now are; but from some other Superior and Celestial Original.

This is evident, Because (1.) the Antediluvian Air (as was before prov'd,) never retain'd great Quantities of Vapours, or sustained any Clouds

capable of producing such considerable, and so lasting a Rain; as this most certainly was. (2.) The Quantity of Waters on the *Antediluvian* Earth, where there was no Ocean, (as we saw just now) was very small in comparison of that at present, and so could contribute very little towards the Deluge. (3.) If the Quantity of Waters on the Face of the Earth had then been as great as now, and had all been elevated into Vapours and descended on the dry Land alone, it were much too small to cause such a Deluge as this was. (4.) But because, if the Waters were all rais'd into Vapours, and descended into Rain, they must either fall upon, or run down into the Ocean, the Seas, and those Declivities they were in before, they could only take up and possess their old places; they therefore could not contribute a jot to that standing and permanent Mass of Waters which cover'd the Earth at the Deluge. (5.) The Expression us'd by the sacred Historian, that the *Windows, Flood-gates, or Cataracts* of Heaven were open'd at the first falling, and shut at the ceasing of these Waters, very naturally agrees to this superior and celestial Original.

vid. Theo.
l. i. c. 2.

Gen. vii.
ii. &
viii. 2.

XLIX. This vast Fall of Waters, or Forty Days Rain, began either on the sixth Day of the Week, or *Friday* the 28th Day of *November*, according to the present *Hebrew* Chronology; or on *Monday* *December* the 2^d, according to the exacter Chronology, being the seventeenth Day of the second Month from the *Autumnal Equinox*.

Gen. vii.
ii.

In the six hundredth Year of Noah's Life, in the second Month, the seventeenth Day of the Month, the Windows of Heaven were opened, and the Rain was upon the Earth forty Days and forty Nights.

Thus

Thus *Abydenus* and *Berosus* say it began on the fifteenth Day of *Desius*, the second Month from *Langius de* the *Vernal Equinox*; which, if the Mistake, arising *annis Chri-* 'tis probable from the ignorance of the change in *stii*, p. 255. the Beginning of the Year at the *Exodus* out of *Egypt*, or perhaps from the Copyers alone, by putting *Desius* instead of *Dius*, which was the second Month from the Autumnal Equinox, be but corrected, is within a Day or two agreeable to the Narration of *Moses*, and so exceedingly confirms the same. Thus also, what is still more remarkable, *Plutarch* tells us that *Osiris*, or *Noah* went into the Ark exactly on the 17th Day of the Month *Atbyr*, in which the Sun passes through the Sign *Scorpius*, or the very same 17th Day of the P. 124. second Month from the Autumnal Equinox which 125. we here assign, and which the sacred History as- prius. ferts; as we have already seen.

L. The other main Cause of the Deluge, was the breaking up the Fountains of the great *Abyss*, or the causing of such Chaps and Fissures in the upper Earth, as might permit the Waters contain'd in the Bowels of it, when violently press'd and squeez'd upwards, to ascend, and so add to the Quantity of those which the Rains produced.

All the Fountains of the great deep were broken up. Gen. vii. 11.

LI. All these Fountains of the great Deep were broken up on the very first Day of the Deluge; or the very first Day when the Rains began.

In the six hundredth Year of Noah's Life, in the Gen. vii. second Month, the seventeenth Day of the Month, the 11. same Day were all the Fountains of the great Deep broken

broken up, and the Windows of Heaven were opened.

LII. Yet the very same Day, *Noah*, his Family, and all the Animals entred into the Ark.

Gen. vii.

13. 14.

In the self-same Day, last mention'd, entred Noah, and Shem, and Ham, and Japheth, the Sons of Noah, and Noah's Wife, and the three Wives of his Sons with them into the Ark: They, and every Beast after his kind, and all the Cattle after their kind, and every creeping thing that creepeth upon the Earth after his kind, and every Fowl after his kind, every Bird of every sort.

LIII. The Waters of the Deluge increas'd by degrees five Months till their utmost height; and then decreas'd by degrees still longer till they were clearly gone off the Face of the Earth.

This is evident from the entire *Series* and Course of the *Mosaick History*, in the seventh and eighth Chapters of *Genesis*.

LIV. The Waters of the Deluge were Still, Calm, free from Commotions, Storms, Winds, and Tempests of all sorts, during the whole time in which the *Ark* was afloat upon them.

Gen. vi.

15.

This is evident from the Impossibility of the *Ark's* abiding a stormy Sea, considering the vast Bulk, and particular Figure of it. For since it was three hundred Cubits long, fifty Cubits broad, and thirty Cubits high; which is, according to the most accurate Determination of the Cubits length, by the Right Reverend the Lord Bishop of *Peterborough*, above five hundred
and

and forty seven *English* Feet long, above ninety one Feet broad, and near fifty five Feet high : And since withal it appears to have been of the Figure of a Chest, without such a peculiar Bottom, and Proportion of Parts, as our great Ships are contriv'd with ; 'tis evident, and will be allow'd by Persons skill'd in Navigation, that 'twas not capable of enduring a stormy Sea. It must, whenever either the Ridges or Hollows of vast Waves were so situate, that it lay over cross the one or the other, have had its back broken, and it self must have been shatter'd to pieces ; which having not happen'd, 'tis a certain evidence of a calm Sea, during the whole time it was afloat.

LV. Yet during the latter part of the Deluge, there was a considerable Wind, if not Storms and Tempests also.

God made a wind to pass over the Earth, and the waters asswaged. Gen. viii. I.

Thou coveredst the Earth with the deep, as with a Psalm civ. garment; the waters stood above the mountains. At 6, 7, 8. thy rebuke they fled; at the voice of thy thunder they hasted away. They go up to the mountains; they go vid. Philo- down by the vallies, unto the place which thou hast nis descrip- appointed for them. tionem Di- lucii atque

LVI. This Deluge of Waters was Universal in its Extent and Effect; reaching to all the Parts of the Earth, and destroying all the Land-Animals on the entire Surface thereof; those only excepted which were with *Noah* in the Ark.

The following Texts, especially if compar'd *Essay*, Pref.
with the thirty fifth foregoing *Phænomenon*, and & Part 3.
added to Dr. *Woodward's* Observations, attesting § 2. Vid.
the Theor. l. 1. c. 3.

the same thing; will put this Assertion above rational Exception.

Gen. vi. 13. *God looked upon the earth, and behold it was corrupt; for all flesh had corrupted his way upon the earth. And God said unto Noah, The end of all flesh is come before me.*

§ 17. *Behold, I even I do bring a flood of waters upon the earth, to destroy all flesh, wherein is the breath of life from under heaven: and every thing that is in the earth shall die.*

Chap. vii. 4. *Every living substance that I have made, will I destroy from off the face of the earth.*

§ 19, 20, 21, 22, 23. *All the high hills that were under the whole heaven were covered. — And all flesh died that moved upon the earth, both of fowl, and of cattle, and of beast, and of every creeping thing that creepeth upon the Earth, and every man. All in whose nostrils was the breath of life; all that was in the dry land died. And every living substance was destroyed which was upon the face of the ground, both man and cattle, and the creeping thing, and the fowl of the heaven, and they were destroyed from the Earth; and Noah only remained alive, and they that were with him in the Ark.*

LVII. The Waters at their utmost height were fifteen Cubits above the highest Mountains, or about 3 Miles above the neighbouring Plains, or 6 Miles above the common Surface of the Earth.

Vid. Varen. Geog. p. 60.

Gen. vii. 16, 20. *All the high hills under the whole heaven were covered. Fifteen cubits upwards did the waters prevail, and the mountains were covered.*

LVIII. Whatever be the height of that Gordyeen Mountain whereon the *Ark* rested Now; it was at that time the highest of all

all others, at least in those parts of the World.

This is evident from what has been already vid. Hy- observ'd, That tho' the utmost height of the poth. 8. Waters were fifteen Cubits above the highest prius. Mountains, and so many hundreds, nay, thousands above the most of them; yet did the Ark rest on the very first day on which the Waters began to diminish, more than two Months before the emerging of the Tops of the other Mountains; as is evident from the Texts following.

The waters prevailed upon the earth (from the Gen. vii. seventeenth day of the second, to the seventeenth ult. (with day of the seventh month) *an hundred and fifty* ^{y 11.)} *days.* And God remembred Noah, and all the cat- Chap. viii. tle that was with him in the Ark; and God made a I, 2, 3, 4, 5, wind to pass over the earth, and the waters asswaged. *The fountains also of the deep, and the windows of heaven were stopped, and the rain from heaven was restrained.* And the waters returned from off the earth continually, and after the end of the hundred and fifty days the waters were abated. And the ark rested in the seventh month, on the seventeenth day of the month, upon the mountains of Ararat. And the waters decreased continually until the tenth month: in the tenth month, on the first day of the month, were the tops of the mountains seen.

LIX. As the Fountains of the great Deep were broken up at the very Beginning of the Deluge, so were they stopp'd at the end of 150 Days, on the seventeenth Day of the seventh Month.

The fountains also of the deep, and the windows Gen. viii. of heaven were stopped, and the rain from heaven² was restrained.

LX. The

LX. The Abatement and Decrease of the Waters of the Deluge was first by a Wind which dried up some; and secondly, by their descent through those Fissures, Chaps, and Breaches, (at which part of them had before ascended) into the Bowels of the Earth, which received the rest. To which latter also the Wind, by hurrying the Waters up and down, and so promoting their lighting into the beforemention'd Fissures, was very much subservient.

Gen. viii. God made a wind to pass over the earth, and the waters asswaged.

† 3. The waters returned from off the earth continually, or going and returning.

Job xxxviii. 8, 10, 11. Who shut up the sea with doors, when it brake forth as if it had issued out of the womb? ——— When I brake up for it my decreed place, and set bars and doors, and said, Hitherto shalt thou come, but no further; and here shall thy proud waves be stayed.

Psal. civ. 6, 7, 8, 9. Thou coveredst the Earth with the deep, as with a garment: the waters stood above the mountains. At thy rebuke they fled: at the voice of thy thunder they hasted away. They went up by the mountains: they went down by the vallies unto the place which thou hadst appointed for them. Thou hast set a bound that they may not pass; that they turn not again to cover the earth.

LXI. The Antediluvian Year was, in absolute Space of Time, nearly equal to our present and ancient Lunar one, or above 10 Days shorter than our present Solar Year.

P. 193. This has been prov'd under the XI. Hypothesis &c. prius. already.

LXII. Yet

LXII. Yet the *Antediluvians* had, generally speaking, full 360 Days in their Year.

This has been also prov'd in the X. *Hypothesis* already.

LXIII. The dry Land, or habitable Part of the Globe, is, since the Deluge, divided into two vast *Continents*, almost opposite to one another, which, as is most probable, are separated by a great Ocean interpos'd between them.

This every Map of the Earth is a sufficient Proof of.

LXIV. One of these *Continents* is considerably larger than the other.

This is evident the same way with the former.

LXV. The larger *Continent* lies most part on the *North-side* of the Equator, and the smaller, as far as is yet certainly known, most part on the *South*.

This (if we take *South-America*, the most considerable and entire Branch of the whole, for the *Continent* here referr'd to, as 'tis reasonable to do) is also evident the same way with the former.

LXVI. The Middle or Centre of the *North-Continent*, between the utmost Bounds, *North* and *South*, *East* and *West*, is about sixteen or eighteen Degrees of *Northern Latitude*; and that of the *South* about sixteen or eighteen Degrees of *Southern Latitude*.

This

This may soon be found by measuring the Boundaries of the several *Continents* on a Globe or Map, and observing the Position of their Centres.

LXVII. The distance between the *Continents*, measuring from the larger or *Northern South-Eastward*, is greater than that the contrary way, or *South-Westward*.

This is evident by the like means with the former: It being farther from *China*, or the *East-Indies* to *America* going forward *South-East*, than from *Europe* or *Africa* going thither *South-West*.

LXVIII. Neither of the *Continents* is terminated by a round or even circular Circumference: But mighty Creeks, Bays, and Seas running into them; and as mighty Peninsula's, Promontories, and Rocks jetting out from them, render the whole very unequal and irregular.

This none who ever saw a Globe or Map of the World can be ignorant of.

LXIX. The depth of that *Ocean* which separates these two *Continents* is usually greatest farthest from, and least nearest to either of the same *Continents*; there being a gradual descent from the *Continents* to the middle of the *Ocean*; which is the deepest of all.

This is a Proposition very well known in Navigation; and in several *Sea-Charts* relating thereto, may easily be observed.

LXX. The greatest part of the *Islands* of the Globe are situate at small Distances from the Edges of the great *Continents*; very few appearing near the middle of the main *Ocean*.

This the bare Inspection into a Map or Globe of the World will soon give Satisfaction in.

LXXI. The Ages of Men decreas'd about one half presently after the Deluge; and in the succeeding 1300 Years were gradually reduced to that Standard at which they have stood ever since.

This the following Tables will easily evince.



Ages of the *Antediluvians* in
their Years: According
to the *Samaritan*.

<i>Adam</i> —————	930
<i>Seth</i> —————	912
<i>Enos</i> —————	905
<i>Cainan</i> —————	910
<i>Mahalaleel</i> —————	895
<i>Jared</i> —————	847
<i>Enoch</i> (translated) ———	365
<i>Methuselah</i> —————	720
<i>Lamech</i> —————	653
<i>Noah</i> —————	950
<i>Sem</i> —————	600

Ages of the *Postdiluvians* in
the present Years.

<i>Sem</i> —————	600	Gen. x. 10, 11.
<i>Arphaxad</i> —————	438	12, 13.
<i>Salah</i> —————	433	14, 15.
<i>Heber</i> —————	404	16, 17.
<i>Phaleg</i> —————	239	18, 19.
<i>Ren</i> —————	239	20, 21.
<i>Serug</i> —————	230	22, 23.
<i>Nahor</i> —————	148	24, 25.
<i>Terah</i> —————	145	32.
{ <i>Abraham</i> —————	175	xxv. 7.
{ <i>Sarah</i> —————	127	xxiii.
{ <i>Isaac</i> —————	180	xxxv. 28.
{ <i>Ismael</i> —————	137	xxv. 17.
<i>Jacob</i> —————	147	xlvi. 28.
{ <i>Joseph</i> —————	110	l. 26.
{ <i>Levi</i> —————	137	Exod. vi. 16.
{ <i>Kohath</i> —————	133	18.
{ <i>Hesron</i> about ———	133	Job i. 1, 4.
{ <i>Job</i> about —————	180	& xlii. 16.
{ <i>Amram</i> —————	137	18.
{ <i>Segub</i> about ———	137	Exod. vi. 20.
{ <i>Izhar</i> about ———	137	
{ <i>Pallu</i> about ———	137	
{ <i>Jocebede</i> about ———	137	
{ <i>Miriam</i> about ———	130	
{ <i>Aaron</i> —————	123	Num. xxxiii.
{ <i>Moses</i> —————	120	39.
{ <i>Corah</i> —————	125	Deut. xxxiv. 7.
{ <i>Dathan</i> —————	125	
{ <i>Abiram</i> —————	125	
{ <i>Joshua</i> —————	110	Jos. xxiv. 29.
{ <i>Rahab</i> about ———	135	
<i>Booz</i> about —————	125	
{ <i>Obed</i> about ———	110	1 Sam. iv. 15.
{ <i>Eli</i> —————	98	
<i>Jesse</i> about —————	85	
<i>Barzillai</i> above ———	80	2 Sam. xix. 32.
<i>David</i> —————	70	v. 4.

For the rest, *Vide Uffer. Chron. Sac. Cap. 8, and 12.*
& *Annal. A. M. 2552.*

LXXII. Our upper Earth, for a considerable depth, even as far as we commonly penetrate into it, is *Fæctitious*, or newly acquir'd at the Deluge: The ancient one having been covered by fresh *Strata* or *Layers* of Earth at that time, and thereby spoil'd or destroy'd as to the use and advantage of Mankind.

I will destroy them with the Earth.

Gen. vi.

Neither shall there any more be a Flood, Διαφθεῖραι, 13. & ix. 11. to destroy, corrupt, or spoil the Earth.

This is moreover evident by the vast numbers of the Shells of Fish, Bones of Animals, entire or partial Vegetables, and other very strange things buried at the Deluge, and enclosed in the Bowels of the present Earth, and of its most solid and compacted Bodies, to be commonly seen at this Day. Thus particularly we find both in Dr. *Plott*, and the Philosophical Transactions, a strange Passage relating to *Switzerland*. Take the Account in Dr. *Plott*'s own Words, *Hist. of Staff.* Philos. Chap. 2. § 71. “ Many Heterogeneous Bodies Trans. “ belonging to the Sea — are many times found N. 77. “ by digging in the Bowels of the Earth. Such “ was the Mast, the Ingenious Author of *Mercurius Centralis* mentions, dug out of the Top of “ an high Hill in *Greenland*, with a Pully hanging to it. But the most prodigious Story we “ have of this kind is that of *Baptista Fulgosus*, *Ludovicus Moscardus*, and *Theodorus Moretus*, who “ tells us that at the Village of *Bern* in *Switzerland*, “ Anno 1460, in a Mine 50 Fathoms deep, there “ was dug up a whole Ship with its Anchors and “ broken Masts, in which were the Carcasses of “ 40 Mariners, together with their Merchandise: “ which *Fulgosus* more particularly tells us as a “ thing

Essay,
passim.

“ thing done in his own time, and seen by many
 “ grave and sober Men, from whom (*qui in re præ-*
 “ *sentis fuere,*) he says he receiv’d a personal Ac-
 “ count of it.” And what mighty Fish-Bones are
 found when the Mountain tops are wash’d down
 in *Tartaria*, I had rather the Reader should be in-
 form’d by his Excellency the *Muscovite Ambassador*
 himself, who travelled in those Regions, than by
 any Account of my own from him. See *Ysbrants*
Ides’s Travels from Moscow to China, Pag. 25, 26.
 And this *Phænomenon* is fully attested not only
 by very many occasional Remarks of others, but
 more especially by the careful and numerous Ob-
 servations of an Eye-Witness, the Learned Dr.
Woodward. ’Tis true, this excellent Author was
 forc’d to imagine, and accordingly to assert, That
 the ancient Earth was dissolv’d at the Deluge,
 and all its Parts separatrd from one another; and
 so the whole, thus dissolv’d and separated, taken
 up into the Waters which then cover’d the Earth;
 till at last they together settled downward, and
 with the fore-mention’d Shells, Bones, and Ve-
 getables, inclos’d among the rest of the Mass,
 compos’d again that Earth on which we now live.
 But this Hypothesis is so strange, and so miracu-
 lous in all its Parts; ’tis so wholly different from
 the natural Series of the *Mosaick History* of the
 Deluge; takes so little notice of the *opening the*
Windows of Heaven, and the thence deriv’d forty
 Days Rain, the principal cause thereof; is so con-
 trary to the Universal Law of mutual Attraction,
 and the specifick Gravities of Bodies; accounts
 for so few of the before-mention’d *Phænomena*
 of the Deluge; fixes the time of the Year for its
 commencing so different from the Truth; im-
 plies such a sort of new Formation or Creation
 of the Earth at the Deluge, without Warrant for
 the

the same; is in some things so little consistent with the *Mosaick* relation, and the *Phænomena* of Nature; and upon the whole is so much more than his Observations require, or will warrant, that I cannot but dissent from this particular Hypothesis, tho' I so justly honour the *Author*, and so highly esteem, and frequently refer to the *Work* it self. All that I shall say farther is this, That the *Phænomena* of the *interior* Parts of the Earth, by this *Author* so exactly observ'd, are on the common Grounds or Notions of the Deluge, (which suppose the Waters to have been pure, without any other Mixtures) so unaccountable, and yet so remarkable and evident, that if no other rational Solution could be offer'd, 'twere but just and necessary to admit whatever is asserted by this *Author*, rather than deny the Reality of those *Phænomena* or ascribe the plainest Remains of the Animal and Vegetable Kingdom to the sportings of Nature, or any such odd and *Chimerical* Occasions, as some Persons are inclinable to do. But withal, I must be allow'd to say, and the *Author* himself will not ^{Essay,} disagree, That his *Hypothesis* includes things so ^{P. 82.} strange, wonderful, and surprizing, that nothing but the utmost Necessity, and the perfect Unaccountableness of the *Phænomena* without it, ought to be esteem'd sufficient to justify the Belief and Introduction of it. Which straits that Account of the Deluge we are now upon, not forcing me into, as will appear hereafter; I have, I think, but just Reasons for my Disbelief thereof; and as just, or rather the same Reasons to embrace that Assertion we are now upon, that this upper Earth, as far as any Shells, Bones or Vegetables are found therein, was *adventitious*, and newly acquir'd at the Deluge, and not only the old one dissolv'd, and resettled in its ancient Place again.

LXXIII. This *Faëtitious Crust* is universal, upon the Tops of the generality of Mountains, as well as in Plains and Vallies; and that in all the known Climates and Regions of the World.

Essay, p. 5, 6, 7. This is fully attested by the Observations of the same *Author*, and those which he procur'd from all Parts of the World conspiring together.

LXXIV. The Parts of the present upper *Strata* were, at the time of the Waters covering the Earth, loose, separate, and divided; and so floated in the Waters among one another uncertainly.

Pref. and p. 74. This is proved by the same *Author's* Observations.

LXXV. All this Heterogeneous Mass thus floating in the Waters, by degrees descended downwards, and subsided to the Bottom, pretty nearly according to the Law of Specifick Gravity; and there compos'd those several *Strata* or *Layers*, of which our present upper Earth does consist.

P. 75. This is prov'd by the same Observations.

LXXVI. Vast Multitudes of Fishes belonging both to the Seas and Rivers, perish'd at the Deluge; and their Shells were buried among the other Bodies or Masses which subsided down, and compos'd the *Layers* of our upper Earth.

P. 75, 76. This is prov'd by the same Observations.

77. LXXVII. The same Law of Specifick Gravity which was observ'd in the rest of the Mass

Mafs, was alfo observ'd in the fubfidence of the Shells of Fifhes; they then in the main finking together with, and accordingly being now found enclos'd among thofe *Strata* or Bodies which are nearly of their own feveral Specifick Gravities: The heavier Shells being confequently ftill enclos'd among the heavier *Strata*, and the lighter Shells among the lighter *Strata*, in the Bowels of our prefent Earth.

This is prov'd by the fame Observations. P. 75, 76, 77.

LXXVIII. The *Strata* of *Marble*, of *Stone*, and of all other folid Bodies, attained their Solidity, as foon as the *Sand*, or other matter whereof they confift, was arriv'd at the Bottom, and well fettled there. And all thofe *Strata* which are folid at this Day, have been fo ever fince that time.

This is prov'd by the fame Observations. Pag. 79.

LXXIX. Thefe *Strata* of *Stone*, of *Chalk*, of *Coal*, of *Earth*, or whatever matter they confifted of, lying thus each upon other, appear now as if they had at firft been parallel, continued, and not interrupted: But as if, after fome time they had been diflocated and broken on all Sides of the Globe, had been elevated in fome, and deprefs'd in other Places; from whence the Fiffures and Breaches, the Caverns and *Grotto's*, with many other Irregularities within and upon our prefent Earth, feem to be deriv'd.

This is prov'd by the fame Observations. P. 79, 80, 81.

LXXX. Great Numbers of Trees, and of other Vegetables were also, at this Subsidence of the Mass aforesaid, buried in the Bowels of the Earth: And such very often as will not grow in the Places where they are now lodg'd: Many of which are pretty entire and perfect, and to be distinctly seen and consider'd to this very Day.

P. 77, 78, This is prov'd by the same Observations.
113.

LXXXI. It appears from all the Tokens and Circumstances which are still observable about them, that all these Vegetables were torn away from their ancient Seats in the Spring time, in or about the Month of *May*. But then this must be restrain'd to the Vegetables found in these *Northern* Climates; for otherwise, 'tis always all Seasons to one Place of the Earth or other. Otherwise we should have lost a great Part of the *Antedivian* Plants, even all those whose Seeds were not ripe at the Time when they were born away into the Water.

Pag. 274, This is prov'd by the same Observations.
275.

LXXXII. All the *Metals* and *Minerals* among the *Strata* of our upper Earth owe their present Frame and Order to the Deluge; being reposed therein during the Time of the Waters covering the Earth, or during the Subsidence of the before-mention'd Mass.

Pag. 179, This is prov'd by the same Observations.
180.

LXXXIII.

LXXXIII. These *Metals* and *Minerals* appear differently in the Earth, according to the different manner of their first Lodgment: For sometimes they are in loose and small Particles, uncertainly inclos'd among such Masses as they chanc'd to fall down withal: At other times some of their Corpuscles happening to occur and meet together, affix'd to each other; and several convening, uniting, and combining into one Mass, form'd those *Metallick* and *Mineral Balls* or *Nodules* which are now found in the Earth: And according as the Corpuscles chanc'd to be all of a kind or otherwise, so the Masses were more or less simple, pure, and homogeneous. And according as other Bodies, Bones, Teeth, Shells of Fish, or the like, happen'd to come in their way, these *Metallick* and *Mineral* Corpuscles affix'd to and became conjoin'd with them; either within, where it was possible, in their Hollows and Interstices; or without, on their Surface and Outsides, filling the one, or covering the other: And all this in different Degrees and Proportions, according to the different Circumstances of each individual case.

All this is prov'd by the same Observations. P. 179. &c.

LXXXIV. The inward parts of the present Earth are very irregular and confused. One Region is chiefly *Stony*, another *Sandy*, a third *Gravelly*. One Country contains some certain kinds of *Metals* or *Minerals*,
another

another quite different ones. Nay, the same Lump or Mass of Earth not seldom contains the Corpuscles of several *Metals* or *Minerals*, confusedly intermix'd with one another, and with its own earthy Parts. All which Irregularities, with several others that might be observ'd, even contrary to the Law of Specifick Gravity in the placing of the different *Strata* of the Earth, demonstrate the Original *Fund* or *Promptuary* of all this upper factitious Earth to have been in a very Wild, Confus'd, and *Chaotick* Condition.

Essay,
passim &
p. 170, &c.
Varen.

All this the fore-mention'd, and all other Observations of the like Nature fully prove.

Geogr. I. 1.
c. 7. Prop.
7.

LXXXV. The uppermost and lightest *Stratum* of Soil or *Garden Mould*, as 'tis call'd; which is the proper Seminary of the Vegetable Kingdom, is since the Deluge very thick spread usually in the Valleys and Plains, but very thin on the Ridges or Tops of Mountains; which last, for want thereof, are frequently Stony, Rocky, Bare and Barren.

This easy Observations of the Surface of the Earth in different Places will quickly satisfy us of.

LXXXVI. Of the four ancient Rivers of Paradise there are still two remaining, tho' not exactly in the old Channels; but the other two are so utterly lost, that the *Mosaick* Description does not at all agree to them at present.

This

This the multitude of unsatisfactory Attempts Gen. ii.
to discover all these Rivers, and their Courses; 10, 11, 12,
with an impartial Comparifon of the Sacred 13, 14.
History with the beft Geographical Descriptions
of the Regions about *Mefopotamia* and *Babylon*,
will convince an unbias'd Perfon of.

LXXXVII. Those *Metals* and *Minerals*
which the *Mofaick* Description of Paradise, Gen. ii.
and its bordering Regions takes fuch parti- 10, 11, 12,
cular notice of, and the Prophets fo empha- 13, 14.
tically refer to, are not now met with fo Ezek.
plentifully therein. xxviii. 13.
Apoc. xxi.

This muft be allow'd on the fame grounds with 18, 19, 20.
the former. with xxii.
2.

LXXXVIII. This Deluge of Waters was
a fignal Instance of the Divine Vengeance
on a wicked World; and was the effect of
the peculiar and extraordinary Providence
of God.

God faw that the wickednefs of man was great Gen. vi. 5;
in the earth, and that every imagination of the 6, 7.
thoughts of his heart was only evil continually. And
it repented the Lord that he had made man on the
earth, and it grieved him at his heart. And the
Lord faid, I will deftroy man whom I have created
from the face of the earth; both man and beaft, and
the creeping thing, and the fowls of the air; for it
repenteth me that I have made them.

The earth was corrupt before God, and the earth 11, 12,
was filled with violence, and God looked upon the 13.
earth, and behold it was corrupt; for all flefh had
corrupted his way upon the earth. And God faid
unto Noah, the end of all flefh is come before me,
for the earth is filled with violence through them;
and behold I will deftroy them, with the earth.

Behold

† 17.

Behold I, even I, do bring a flood of waters upon the earth, to destroy all flesh wherein is the breath of life from under heaven; and every thing that is in the earth shall die.

2 Pet. ii. 5.

God spared not the old world, but saved Noah, the eighth person, a preacher of righteousness; bringing in the flood upon the world of the ungodly.

LXXXIX. Since the Deluge, there neither has been, nor will be, any great and general Changes in the State of the World, till that time when a Period is to be put to the present Course of Nature.

Gen. viii.
21, 22.

The Lord smelled a sweet savour, and the Lord said in his heart, I will not again curse the ground any more for mans sake; for (or altho') the imagination of man's heart is evil from his youth: Neither will I again smite any more every thing living as I have done. While the earth remaineth, seed-time and harvest, cold and heat, and summer and winter, and day and night shall not cease.

Essay,

Part I. &
5.

And this, as to the Time past, is abundantly confirm'd by all the ancient History and Geography compar'd with the Modern; as is in several Particulars well observ'd by Dr. Woodward, against the groundless opinions of some others to the contrary.

CHAP. V.

Phænomena relating to the General Conflagration. With Conjectures pertaining to the same, and to the succeeding Period till the Consummation of all things.

XC. **A**S the World once perished by Water, so it must by Fire at the Conclusion of its present State.

The heavens and the earth which are now, by the 2 Pet. iii. word of God are kept in store, reserved unto fire, 7. against the day of judgment, and perdition of ungodly men.

The heavens shall pass away with a great noise, & 10. and the elements shall melt with fervent heat; the earth also, and the works that are therein, shall be burnt up.

In the day of God the heavens, being on fire, shall & 12. be dissolved, and the elements shall melt with fervent heat.

But this is so fully attested by the unanimous Consent of both Sacred and Prophane Authority, that I shall omit other particular Quotations; only refer the Reader where he may have more ample Satisfaction.

Scholium. Having proceeded thus far upon more certain Grounds, and generally allow'd Testimonies, as to the most of the foregoing *Phænomena*; I might here break off, and leave the following *Conjectures* to the same State of Uncertainty they have hitherto been in. But being willing

Dr. Hae-
well's A-
pology of
the Power
and Provi-
dence of
God, l. 4.
c. 13.
Theor.
l. 3. c. 3.

willing to comply with the Title, and take in *all* the great and general Changes from first to last; from the primogenial *Chaos*, to the *Consummation* of all things: Being also loath to desert my third *Postulatum*, and omit the Account of those things which were most exactly agreeable to the obvious and literal Sense of Scripture, and fully consonant to Reason and Philosophy: Being, lastly, willing, however, to demonstrate, that tho' these most remote and difficult Texts be taken according to the greatest Strictness of the Letter, yet do they contain nothing but what is possible, credible, and rationally accountable from the most undoubted Principles of Philosophy: On all these Accounts, I shall venture to enumerate, and afterward to account for the following *Conjectures*. In which I do not pretend to be Dogmatical and Positive; nay, nor to declare any firm Belief of the same, but shall only propose them as *Conjectures*, and leave them to the free and impartial Consideration of the Reader.

XCI. The same Causes which will set the World on Fire, will also cause great and dreadful *Tides* in the *Seas*, and in the *Ocean*; with no less Agitations, Concussions, and *Earthquakes* in the *Air* and *Earth*.

- Matt.xxiv. *The Powers of Heaven shall be shaken.*
 29. *The Lord shall roar out of Sion, and utter his*
 Joel iii. *voice from Jerusalem, and the heavens and the earth*
 16. *shall shake.*
 Luk. xxi. *The sea and the waves roaring: Mens hearts fail-*
 25, 26. *ing them for fear, and for looking after those things*
 Vid. *which are coming on the Earth; for the powers of*
 Theor. *heaven shall be shaken.*
 1. 3. c. 11.

XCII.

XCII. The *Atmosphere* of the Earth, before the Conflagration begin, will be oppress'd with *Meteors, Exhalations* and *Steams*; and these in so dreadful a manner, in such prodigious quantities, and with such wild confused Motions and Agitations, that the *Sun* and *Moon* will have the most frightful and hideous Countenances, and their ancient Splendor will be entirely obscur'd; the *Stars* will seem to fall from Heaven; and all manner of horrid Representations will terrify the Inhabitants of the Earth.

I will shew wonders in the Heavens and in the Earth; Blood, and Fire, and Pillars of Smoak.^{Joel ii. 30, 31.}
The Sun shall be turned into Darknefs, and the Moon into Blood, before the great and terrible Day of the Lord come.

The Sun shall be darkened, and the Moon shall not give her Light, and the Stars shall fall from Heaven, and the Powers of Heaven shall be shaken.^{Mat. xxiv: 29.}

There shall be Signs in the Sun, and in the Moon, and in the Stars, and upon the Earth Distress of Nations, with Perplexity: — Mens Hearts failing them for fear, and for looking after those things which are coming on the Earth.^{Luke xxi. 25, 26.}

XCIII. The *Deluge* and *Conflagration* are referr'd, by ancient Tradition, to great Conjunctions of the Heavenly Bodies; as both depending on, and happening at the same.

Thus *Seneca* expressly: ‘*Berosus* (says he)

‘ *Berosus*, qui Belum interpretatus est, ait cursu ista siderum fieri: & adeo quidem id affirmat, ut conflagrationi

who was an Expositor of Belus, affirms, That these Revolutions depend on the Course of the Stars; inso-much that he doubts not to assign the very times of a Conflagration, and a Deluge: That first mention'd when all the Stars, which have now so different Courses, shall be in Conjunction in Cancer, all of them being so directly situate with respect to one another, that the same right line will pass through them all together: That last mention'd, when the same Company of Stars shall be in Conjunction in the opposite Sign Capricorn. And again elsewhere^d, When the Time for the Renovation comes, the Stars will exercise their hostile Force one upon another, and justle one another: Whereby the whole being on fire, all the parts which in their present Constitution have any sparks of light or fire in them, will kindle into one general Conflagration.

XCIV. This general Conflagration is not to extend to the entire Dissolution or Destruction of the Earth, but only to the Alteration, Melioration, and peculiar Disposition thereof into a new State, proper to receive those Saints and Martyrs for its Inhabitants, who are at the first Resurrection

atque diluvio tempus assignet: arsuræ enim terrena contendent, quando omnia sidera, quæ nunc diversos agunt cursus, in Cancrum convenerint, sic sub eodem posita vestigio, ut recta linea exire per orbem omnium possit: Inundationem futuram, cum eadem siderum turba in Capricornum convenerit. Illic Solstitium, hic Bruma conficitur. Senec. *Quest. Nat.* l. 3. c. 29.

^d Et cum tempus advenerit, quo se mundus renovaturus extinguat, viribus ista suis se cædent, & sidera sideribus incurrent: & omni flagrante materia, uno igne, quicquid nunc ex disposito lucet ardebit. Idem, *de consol. ad Marciam.* cap. ult.

to

to enter, and to live and reign a thousand Years upon it, till the second Resurrection, the general Judgment, and the final Consummation of all Things.

The Heavens being on fire shall be dissolved, and the Elements shall melt with fervent Heat. Nevertheless we, according to his Promise, look for new Heavens, and a new Earth, wherein dwelleth Righteousness. ^{2 Pet. iii. 12, 13.}

Behold I create new Heavens, and a new Earth, and the former shall not be remembred nor come into mind. ^{Isa. lxxv. 17.}

Verily I say unto you, That ye which have followed me; In the Regeneration, when the son of Man shall sit upon the Throne of his Glory, ye also shall sit on twelve Thrones judging the twelve Tribes of Israel. And every one that has forsaken Houses, or Brethren, or Sisters, or Father, or Mother, or Wife, or Children, or Lands, for my Names sake, shall receive an hundred fold, now in this time, Houses, and Brethren, and Sisters, and Mothers, and Children, and Lands, with (his present) Persecutions, and in the World to come eternal Life. ^{Mat. xix. 28, 29. Mat. x. 29, 30. Luke xviii. 29, 30.}

Of old thou hast laid the Foundations of the Earth; and the Heavens are the Work of thy Hand: They shall perish, but thou shalt endure; yea all of them shall wax old like a garment; as a vesture shalt thou change them, and they shall be changed. ^{Pf. cii. 25, 26.}

I saw Thrones, and they sat upon them; and Judgment was given unto them: And I saw the Souls of them that were beheaded for the Witness of Jesus, and for the Word of God, and which had not worshipped the Beast, neither his image, neither had received his mark upon their Foreheads, or in their Hands, and they lived and reigned with Christ a thousand years. But the rest of the dead lived not again ^{Apoc. xx. 4. &c.}

until the thousand years were finished: This is the first Resurrection. Blessed and holy is he that hath part in the first Resurrection; on such the second Death hath no Power: But they shall be Priests of God, and of Christ; and shall reign with him a thousand Years, &c.

Theor.

1. 4. c. 2,

3, 4, 5, 6.

But so much has been said on this Head, to omit others, by the *Theorist*, that I shall refer the Reader *thither*, for the other Testimonies of the Holy Scriptures, and the unanimous Consent of the most Primitive Fathers: Both which he at large, and to excellent Purpose, (some Particulars excepted) has insisted on.

XCV. The State of Nature during the *Millennium* will be very different from that at present, and more agreeable to the *Antediluvian*, *Primitive*, and *Paradisiacal* ones.

Acts iii.

21.

Whom the Heavens must receive until the time of the Restitution of all things, which God hath spoken by the mouth of all his holy Prophets since the World began. See more in the *Theory*, Book 4. Chap. 9. and in the Proofs of the former Proposition.

XCVI. The Earth in the *Millennium* will be without a Sea, or any large receptacle fill'd with mighty Collections and Quantities of Waters.

Apoc. xxi.

1.

I saw a new Heaven, and a new Earth; for the first Heaven, and the first Earth were passed away, and there was no more Sea.

XCVII. The Earth in the *Millennium* will have no succession of Light and Darkness; Day and Night; but a perpetual Day.

Apoc. xxi.

25.

Cap. xxii.

5.

The Gates of the new Jerusalem shall not be shut at all by day; for there shall be no night there. And there shall be no night there.

XCVIII.

XCVIII. The State of the *Millennium* will not stand in need of, and so probably will be without, the Light and Presence of the Sun and Moon.

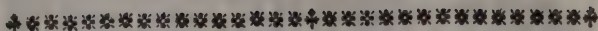
And the City had no need of the Sun, neither of the Moon to shine in it. Apoc. xxi. 23.

And they need no candle, neither light of the Sun. Cap. xxii. 5.

XCIX. At the Conclusion of the *Millennium*, the Final Judgment and *Consummation* of all things, the Earth will desert its present Seat and Station in the World, and be no longer found among the Planetary *Chorus*.

I saw a great white Throne, and him that sat on it; from whose Face the Earth and the Heavens fled away, and there was found no place for them. Apoc. xx. 11. Theor. l. 4. c. 10.





BOOK IV.



SOLUTIONS:

OR,

An Account of the foregoing *Phænomena* from the Principles of Philosophy already laid down.

CHAP. I.

A Solution of the Phænomena relating to the Mosaick Creation, and the original Constitution of the Earth.

- I. All those particular small Bodies, of which our habitable Earth is now compos'd, were originally in a mixed, confused, fluid, and uncertain Condition, without any Order or Regularity. It was an *Earth without form, and void*; had *Darkness* spread over the face of its *Abyss*; and in reality was, what it has been ever styl'd, a perfect *Chaos*.

Hypoth. 1. I. **T**HIS has been already sufficiently accounted for, and need not be here again insisted on.

- II. The Formation of this Earth, or the Change of that *Chaos* into an habitable World, was not a meer Result from any necessary Laws of *Mechanism* independently on the

the Divine Power; but was the proper Effect of the Influence and Interposition, and all along under the peculiar Care and Providence of God.

II. 'Tis not very easy, I confess, in such mighty Turns and Changes of the World, exactly to determine how far, and in what Particulars, a supernatural or miraculous Interposition of the Divine Power is concern'd; and how far the Laws of Nature, or Mechanical Powers ought to be extended. Nay indeed, 'tis difficult enough, in several Instances to determine what is the Effect of a natural and ordinary, and what of a supernatural and extraordinary Providence. 'Tis now evident, that *Gravity*, the most mechanical Affection of Bodies, and which seems most natural, depends entirely on the constant and efficacious, and, if you will, the supernatural and miraculous Influence of Almighty God. And I do not know whether the falling of a Stone to the Earth ought not more truly to be esteem'd a *supernatural Effect*, or a *Miracle*, than what we with the greatest Surprize should so style, its remaining pendulous in the open Air; since the former requires an *active Influence* in the Cause, while the latter supposes *Non-annihilation* only. But besides this, tho' we were able exactly to distinguish in general the ordinary Concurrence of God from his extraordinary, yet would the Task before us be still sufficiently difficult. For those Events or Actions are in Holy Scripture attributed immediately to the Power and Providence of God, which yet were to all outward Appearance according to the constant Course of Things; and would, abstractedly from such Affirmations of the Holy Books, have been esteem'd no more miraculous than the other common Effects of Nature, or usual Accidents

*Vid Lem.
9. cum Co-
roll. prius.
And Dr.
Bentley,
Serm. 7.
p. 26, &c.*

of Human Affairs; as those who have carefully consider'd these Matters, especially the Historical and Prophetical Parts of the *Old Testament*, must be oblig'd to confess. Neither is it unreasonable that all things should in that manner be ascrib'd to the supreme Being on several Accounts. 'Tis from him every thing is ultimately deriv'd: He preserves the Natures, and continues the Powers of every Creature: He not only at first produc'd, but perpetually disposes and makes use of the whole Creation, and every part thereof, as the Instruments of his Providence: He foresaw and fore-adapted the entire Frame: He determin'd his Co-operation or Permission to every Action: He so order'd and appointed the whole System, with every individual Branch of it, as to Time, Place, Proportion, and all other Circumstances, that nothing should happen unseasonably, unfitly, disproportionately, or otherwise than the Junc-tures of Affairs, the Demerits of his reason-able Creatures, and the wise Intentions of his Providence did require. In fine, he so pre-viously adjust'd and contemper'd the Moral and Natural World to one another, that the Marks and Tokens of his Providence should be in all Ages legible and conspicuous, whatsoever the visible secondary Causes or Occasions might be. Seeing then this is the true State of the Case; and that consequently, Almighty God has so constituted the World, that no Body can tell wherein it differs from one, where all were solely brought to pass by a miraculous Power; 'tis by no means untrue or improper in the Holy Books to refer all those Things which bare human Authors would derive from second Causes, the constant Course of Nature, and the Circumstances of human Affairs, to the

the first Cause, the ultimate Spring and Original of all ; and to call Mens Thoughts (which are too apt to terminate there) from the apparent Occasions, to the invisible God, the Creator, Governor, and Disposer of the whole, and the sole Object of their Regard and Adoration. This is, I say, a very proper and reasonable Procedure; this is usually observ'd by the sacred Penmen, (who are thereby peculiarly distinguish'd from prophane Authors) and this is of the highest Advantage in Morality. But then it must be withal acknowledg'd, that this creates great Difficulties in the present Case, and makes it very hard in a philosophick Attempt of this Nature, to distinguish between those Parts of the *Mosaick* Creation, which are *Mechanically* to be accounted for, and those in which the miraculous *Energy* of God Almighty interpos'd it self; which yet, if ever, is certainly to be allow'd in this Case, where a new World was to be form'd, and a wild *Chaos* reduc'd into a regular, beautiful, and permanent System. This being said in general, to bespeak the *Reader's* Candor in the present Case, and to forewarn him not to fear the most Mechanical and Philosophick Account of this Creation, as if thereby the Holy Scriptures were superseded, or the Divine Power and Providence excluded ; I come directly to the Point before us, and shall endeavour to determine what are the Instances of the extraordinary Power and Interposition of God in this whole Affair. That as we shall presently see how Orderly, Methodical, and Regular this Formation was, so we may before-hand be duly sensible how Supernatural, Providential, and *Divine* it was also; and so as well, like *Christians*, contemplate and adore the Omnipotent Creator in his Mi-

raculous, as we, like *Philosophers*, shall attempt to consider and remark his Vicegerent Nature in her *Mechanical* Operations therein. For, notwithstanding what has been above insisted on touching the frequency and propriety of ascribing the Effects of Nature to the Divine Power; (the former being indeed nothing, but the latter acting according to fix'd and certain Laws;) yet, because more has been commonly, and may justly be suppos'd the importance of the Texts of Scripture hereto relating; because the Finger of God, or his supernatural Efficiency, is, if ever, to be reasonably expected in the Origin of things, and that in a peculiar and remarkable manner; because some things done in this Creation are beyond the Power of Philosophy and Mechanism, and no otherwise accountable but by the infinite Power of God himself; because the Days of Creation are signally distinguish'd from those following, in which God is said to have *rested*; (when yet his ordinary Concurrence with the Course of Nature was continu'd without Interruption,) and must therefore be reckon'd such, on which he truly exerted a Power different from the other: On all these accounts, I freely, and in earnest allow and believe, that there was a peculiar Power, and extraordinary Providence exercis'd by the great Creator of all, in this Primitive Origin of the Sublunary World, or Formation of the Earth, which we are a going to account for. The particular Instances I shall give of the same, without presuming to exclude all others, are these following,

1. The Creation of the Matter of the Universe, and particularly of that of the Earth, out of nothing, was, without doubt, originally, the alone
and

and immediate Work of God Almighty. Nature (let what will be meant by that Name) could have no hand in this, from whence at the utmost she can but date her own Birth. This production of a real Being out of nothing; or, to speak more properly, the primary bringing any real thing into Being, is in the Opinion of all Men, the Effect of no less than an infinite and omnipotent Deity. I have already own'd this to be the import of the first Words of this Creation we are now upon, *In the Beginning God created the Heaven and the Earth.* And I think 'tis here no improper Place to declare my Opinion, That considering the *Idea* and nature of God includes *Active Power, Infinite Perfection, with Necessity* and so *Eternity of Existence*; whilst the *Idea* and Nature of Matter supposes *entire Inactivity, no positive Perfection, and a bare Possibility or Capacity of Existence*; 'tis as absurd and unreasonable to attribute eternity and necessity of Existence to the latter, as 'tis rational and natural to ascribe those Perfections, with a Power of Creation, to the former. The very *Being* and *Nature*, as well as the *Properties* and *Powers* of Matter being most justly and most philosophically to be referr'd to the Author of all, the Almighty Creator. And altho' our Imagination (a poor finite, limited, and imperfect Faculty,) be unable to have a positive *Idea* of the manner of the Production of a real Being at first; (as indeed 'twere sufficiently strange, if so confin'd a Power of so imperfect a Creature should adequately reach the highest point of Omnipotence it self;) yet seeing the Absurdities following the Eternity, and Self-subsistence of Matter on the other side are so considerable; and the Certainty of the proper Creation of Spiritual Beings nobler than Matter,

Discourse
p. 4, 5, 7.
Gen. i. 1.

Vid. Dr.
Bentley,
Serm. 6.

such

such as the Souls of Men are, as great, as 'tis utterly incredible they should have been *ab æterno* too, (for I take it to be almost *demonstrable* that Souls are immaterial :) I think 'tis far more reasonable to rest satisfied with our former Assertion, That God did truly bring Matter into being at first, than, its Eternity suppos'd, to make only the Modification and Management thereof the Province of the Almighty: And consequently, the first Instance of a Divine Efficiency with relation to the Subject we are now upon, and the highest of all other, was the original Production of the Matter of which the Earth was to consist, or the proper Creation of those *inferior* Heavens, and of the Earth which were to be the sole Object of the Divine Operations in the Six Days Work. This Particular, I confess, does not so properly belong to our present Business, the Formation of the *Chaos* into a habitable World; but could not well be omitted, either consider'd in it self, as it bears so peculiar a Relation to our present Purpose; or with respect to that Misconstruction I might with some *Readers* have otherwise been liable to. But I proceed;

(2.) The changing of the Course and Orbit of the *Chaos* into that of a Planet (to omit the former *Annual*, and subsequent *Diurnal* Revolutions, which tho' equally from God, yet do not so fully belong to this Place,) or the placing of the Earth in its primitive smaller *Elliptick*, and after in its *Circular* Orbit at its proper Distance, therein to revolve about the *Sun*, was either an Instance of the immediate Power, or at least of the peculiar Providence of God. For if we should suppose, as 'tis possible so to do, that God did not by a miraculous Operation remove the *Chaos* or Comet

Comet from its very Eccentric *Ellipsis* to that Circle in which it now began to revolve; but that he made use of the Attraction or Impulse of some other Body; yet in this Case, (without considering that one of those Powers at least is nothing but a Divine Energy) the Lines of each Bodies Motion, the Quantity of Force, the proper Distance from the *Sun* where, and the exact Time when it happen'd, (to name no other Particulars here,) must have been so precisely and nicely adjusted before-hand by the Prescience and Providence of the Almighty, that here will be not a much less remarkable Demonstration of the *Wisdom, Contrivance, Care, and Goodness*, than the other immediate Operation would have been of the *Power* of God in the World.

(3.) The Formation of the Seeds of all Animals and Vegetables was originally, I suppose, the immediate Workmanship of God. As far as our Microscopes can help us to discern the Make and Constitution of Seeds; those of Plants evidently, and, by what hitherto appears, of Animals too, are no other than the entire Bodies themselves *in parvo*; and contain every one of the same Parts and Members with the compleat Bodies themselves when grown to Maturity. Since therefore, consequently, all *Generation* is with us nothing, so far as we can find, but *Nutrition* or *Augmentation of Parts*; and that agreeably thereto no Seed has been by any Creature produc'd since the Beginning of Things: 'Tis very Just, and very Philosophical to conclude them to have been originally every one created by God, either out of nothing, in the primary Existence of Things; or out of pre-existing Matter, at the *Mosaick* Creation. And indeed, since the Origin of Seeds appears to be hitherto unaccountable by the mechanical Laws of

Vid. Dr.
Bentley,
Serm. 4.

Matter

Matter and Motion, 'tis but reasonable to suppose them the immediate Work of the Author of Nature: Which therefore I think the wariest Philosopher may well do in the present Case.

(4.) The Natures, Conditions, Rules and Quantities, of those several Motions and Powers according to which all * Bodies, (of the same general Nature in themselves,) are specify'd, distinguish'd, and fitted for their several uses, were no otherwise determin'd than by the immediate *Fiat*, Command, Power, and Efficiency of Almighty God. 'Tis to be here consider'd, That tho' the Power of mutual Attraction or Gravitation of Bodies appears to be constant, and universal; nay almost essential to Matter in the present Constitution of the World; (the entire Frame of that System in which we are, if not of all the other Systems, so strictly depending thereon;) yet the other Laws of Nature, on which the particular Qualities of Bodies depend, seem not to be so; but mutable in themselves, and actually chang'd according to the Changes in the Figure, Bigness, Texture, or other Conditions of the Bodies or Corpuscles with which they are concern'd. Thus the *Cohesion* of the parts of Matter, and that in some with less, but in others with the greatest and most surprizing Firmness; the *Fermentation* of several heterogeneous Particles, when mixt together; the *Magnetism* of

* *Utinam cetera Natura Phenomena ex principiis mechanicis eodem argumentandi genere derivare liceret. Nam multa me movent ut nonnihil suspicer ea omnia ex viribus quibusdam pendere posse, quibus corporum particula, per causas nondum cognitae, vel in se mutuo impelluntur, & secundum figuras regulares coherent, vel ab invicem fugantur, & recedunt: quibus viribus ignotis, Philosophi haecenus naturam frustra tentarunt. Newt. Philos. Nat. Princ. Math. Praef. ad Lector.*

the Loadstone, with the various and very strange *Phænomena* of that wonderful Fossil; the *Elasticity* of certain Fluids and Solids; the contrary obstinate Inflexibility and Resistance of others; the different *Density* of several Collections or Masses of Fluids, (while yet the greatest part of their contained Space is Vacuity) not to be considerably increas'd or diminish'd, without the Destruction of the *Species*: All these, and many other *Phænomena* shew, that there are various Rules and Laws of Matter and Motion not belonging to all, as that of Gravitation does, but peculiar to some particular Conditions thereof; which therefore may be chang'd, without any Damage to the Law of Gravity. In the impressing and ordering of which there is room for, if not a Necessity of introducing the particular and immediate Efficacy of the Spirit of God at first, as well as of his continual Concurrence and Conservation ever since. When therefore, in a full Agreement with the ancient Traditions, 'tis said by *Moses*, Gen. i. 2. That *the Spirit of God moved on the Face of the Waters*; we may justly understand thereby his impressing, exciting, or producing such Motions, Agitations, and Fermentation of the several Parts; such particular Powers of Attraction or Avoidance, (besides the general one of Gravity,) of Concord or Enmity, of Union or Separation; and all these in such certain Quantities, on such certain Conditions of Bodies, and in such certain distinct Parts and Regions of the Chaos, as were proper and necessary for that particular Course and Disposition of Nature, which it seem'd good to the Divine Spirit to introduce, and on which this future Frame of Things here below was ever after to depend.

(5.) The Ordering of all Things so that in
the

the space of six successive Solar Revolutions the whole Creation should be finish'd, and each distinct Days Work should be confin'd to, and compleated in its own distinct and proper Period, is also to be ascrib'd to the particular Providence and Interposition of God. That every thing followed in its own order and place: As that the Seeds of Vegetables on the Third, those of Fish and Fowl on the Fifth, and those of the Terrestrial Animals on the Sixth Day, should be every one plac'd in their proper Soil, and fitly dispos'd at their proper time to accompany and correspond with the suitable Disposition of external Nature, and just then to germinate and fructify, when the order and process of the other parts of the Creation were ready for, and required the same.

And here it will be fit to consider an Objection made against the present *Hypothesis*, viz. That if we proceed mechanically and gradually in the Formation of the Earth, from a Comet's Atmosphere, we must allow the whole Subsidence to be as leisurely, and to proceed by the same Steps that the Violence of its Heat decreases; which will then be compleated not in *six Days* or *single Years*, but scarcely in as many *Centuries*. But in Answer to this, I deny that all the Confusions of a Comet's Atmosphere are owing to the Heat at the *Perihelion*; and I also affirm, that since Astronomers find by Observation, that upon a Comet's Return to the Solar Regions towards its *Perihelion*, its Atmosphere does still return therewith, and is not at all settled and formed like a Planet, I must contradict that Observation, if I should ascribe the Formation of our Earth to such a gradual and tedious Operation. In my Opinion all the same Laws, Properties, and Operations of Bodies which we find establish'd here on Earth, do not
so

so universally obtain in the Atmospheres of Comets: But several new ones were, I suppose, introduc'd at the *Mosaick* Creation; such I mean (besides the Law of Gravity, and the general and mechanical Laws of Motion, which I look upon as universal, and some of them unalterable,) as were fit or necessary for the primary formation and continuance of that New World, which God's Providence was then introducing. I do not therefore say with some, That the Earth was not form'd according to the known Laws of *Mechanism*, but by the Efficacy of the Divine Spirit which moved on the Face of the Waters: But denying the Opposition, I affirm, that the Earth was form'd according to the known Laws of *Mechanism*, some of them introdu'd then by the Efficacy of the Divine Spirit which moved on the Face of the Waters, and ever since continued among us. For, for the Almighty to introduce new and regular Laws at the Beginning of a new World which are to be ever after observ'd in it, I take to be a miraculous Interposition very worthy of God, and very accountable to the Reason of Mankind. And to some of these Laws duly tim'd and proportion'd, I refer the exactness of the present Observations; *viz.* That all things should in just 6 Days or Years time be finish'd and compleated, in the manner we have 'em mention'd in the *Mosaick* History. And truly every thing here does so suit together, that the plain Footsteps of particular Art and Contrivance are visible in the whole Conduct and Management of this Matter: Which therefore is not to be deriv'd from meer mechanical Laws of Brute Matter, but from a Supernatural and Divine Providence.

(6.) But principally, The Creation of our first
Parents

Parents is to be esteem'd the peculiar Operation of the Almighty; and that whether we regard the Formation of their Bodies, or the Forepast Creation and After-Infusion of their Souls. 'Tis evident from the *Mosaick* History of the Creation, that our first Parents were on the very same Day in which they were made, in a State of Maturity and Perfection, and capable of all Human Actions, both of Mind and Body. Now if they, like the other Animals, had been produc'd in the usual Time and Process of Generation, and come to Ripeness of Age and Faculties by degrees afterwards; that were plainly impossible. This Creation therefore must have been peculiar, and the immediate Effect of a Divine Power. And this is no less agreeable to Philosophy, than suitable to the Dignity of the Subject, and for the Honour of Mankind. It has been already observ'd that the Seeds of Plants and Animals must be allow'd to have been all the immediate Workmanship of God; and that they contain every individual Part or Member of the entire Bodies, *in parvo*; and that by consequence Generation is nothing else but Nutrition or Augmentation. Since therefore God by his immediate Power, created the entire Bodies of all Plants and Animals, 'tis by no means hard to conceive that he might create them in what Degree of Maturity and Perfection he pleas'd, without any manner of Infringement of the Order of Nature then to be establish'd: And if we have reason to believe, that the Bodies of brute Creatures were created *in parvo*, in a small State, such as we now call Seeds, and so requir'd a proper Generation, *i. e.* Nutrition and Augmentation of Parts; (as the *Mosaick* History plainly describes them; and had it not done so, we could

could not with any Certainty have asserted it;) We have sure equal Reason to believe, from the Description of the same Author in this other case, that the Bodies of our first Parents were Originally created in their mature Bulk, and State of Manhood; so as immediately to be capable of the same Operations which at any time afterward they might be thought to be. This miraculous Origination of the Bodies of our first Parents is therefore very rationally ascribed to the Finger of God by *Moses*: And we may justly believe that every Person in the Blessed Trinity, as 'tis represented in the Sacred History, was peculiarly concern'd in the Production of that Being which was to bear the Image of God, and be made capable of some degree of his Immortality. And then as to the Soul of Man, 'tis certainly a very distinct Being from, and one very much advanced above the Body; and therefore if we were forc'd to introduce a Divine Power in the Formation of the latter, we can do no less than that in the Creation and Infusion of the former. And indeed the Dignity and Faculties of the Human Soul are so vastly exalted above all the Material, or merely Animal Creation, that its Original must be deriv'd from the immediate Finger of God, in a manner still more peculiar and divine than all the rest. That nearer Resemblance of the Spiritual Nature, Immortal Condition, Active Powers, and Free, Rational, and Moral Operations of the Divine Being it self, which the Souls of Men were to bear about them, did but require some peculiar and extraordinary Conduct in their first Existence, after Union with Matter, and Introduction into the corporeal World. Agreeably whereto we may easily observe a single Distinction in the Sacred History between the Formation

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of

of all the other Animals, and the Creation of Man.

Gen. i. 20. In the former Case 'tis only said, *Let the Waters bring forth the moving Creature that hath Life. Let*
 * 24. *the Earth bring forth the living Creature after his Kind.* But of the latter the entire Trinity consult:
 * 26. *And God said, Let Us make man in our Image, after our Likeness. And the Lord God formed*
 Chap. ii. 7. *man of the dust of the ground, and breathed into his nostrils the breath of life, and man became a living soul.* As therefore the several Parts of the *Mosaick* Creation before-mention'd are not to be mechanically attempted, but look'd upon as the Effects of the extraordinary and miraculous Power and Providence of God, so more especially the Formation of the Body of Man in its mature State, and most of all the primary Creation and after-Infusion of the rational human Soul, is to be wholly ascrib'd to the same wonderful Interposition and Efficiency of the Supreme Being, the Creator of all things, *God blessed for evermore.* All which taken together and duly consider'd, is, I think, a sufficient and satisfactory Account of the Proposition before us, and attributes as much to the miraculous and immediate Hand of God, as either Tradition, Reason, or Scripture, require in the present Case.

III. The Days of the Creation, and that of Rest, had their Beginning in the Evening.

Coroll. 1. III. This has been already accounted for, and
 Lem. 73. that Account need not here be repeated.

& Hypoth. Corollary 1. *This Phænomenon in some measure*
 5. cum Coroll. 1. *confirms our Hypothesis, that the Primitive Days*
 prin. *of the World were Years also. For otherwise the space of one single short Night seems too inconsiderable to have been taken such notice of in this History; and*
en, and ever after, made the first half of the Natural

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ral Day. But if it were equal to two or three Months, the time from the Autumnal till the Vernal Equinox, which may be called half a Year, it was too considerable to be omitted, and its Memory was very justly preserved in succeeding Ages.

Corollary 2. We may here begin to take notice of the Regularity and Methodicalness of this History of the Creation: Which, tho' it principally intends the giving an account of the Visible Parts of the World, and how the state of Nature in each Period appeared in the Day time; yet omits not the foregoing Night: Which is very Mechanical and Natural. For in the preceding Night all things were so prepar'd and dispos'd, that the Work of each Day might, upon its Appearance, display it self; might be exhibited, not in its unseen Beginnings, or secret Workings, not in its previous Causes, and gradual Procedure, (which was not the Design of this History) but in that more distinct and perfect Condition in which things would in the Day time appear to the view of a Spectator, and under which chiefly they were to be described and recorded in this History.

IV. At the time immediately preceding the six Days Creation, the Face of the *Abyss*, or superior Regions of the *Chaos*, were involv'd in a thick Darknefs.

IV. If we consider what has been already said ^{Lem. 45;} of the Nature of a Comet, or peculiarly of that ^{Exc. and} *Atmosphere* which has been before shewn to have ^{60, 61,} been the ancient *Chaos*, we ought to represent it ^{Exc. &} to our selves as containing a Central, Solid, Hot ^{Hypoth. 1.} Body, of many 100 or 1000 Miles in Diameter; and besides that, a vastly large, fluid, heterogeneous Mass, or congeries of Bodies, in a very rare, separate, and expanded Condition, whose Diameter were ten or eleven times as long as that of the central Solid, which is the *Atmosphere* or *Chaos* ^{prins.}

Theor. p.
35.

now to be consider'd: In which we must remember was contain'd both a smaller Quantity of dry, solid, or earthy Parts, (with a still much smaller of aery and watery) and as large a Quantity of dense and heavy Fluids, of which the main bulk of the Atmosphere was compos'd, all confusedly mix'd, blended, and jumbled together. In which State the *Theorist's* First Figure, excepting the Omission of the Central Solid; will well enough represent it; and in which State, tho' not in their due Proportions, we accordingly delineate it in Plate IX. Fig. 1.

But upon the Change of the Comet's Orbit from a very *Eccentric* to a moderate *Elliptical* one, the Commencing of the *Mosaick* Creation, and the Influence of the Divine Spirit, all things would begin to take their own Places, and each *Species* of Bodies rank themselves into that order, which, according to the Law of Specifick Gravity, were due to them. By which Method the Mass of dense Fluids, which compos'd one part of the entire *Chaos*, being heavier than the Masses of Earth, and Water, and Air, would sink downwards with the greatest Force and Velocity; and elevate those Masses inclosed among them upwards. Which Procedure must therefore distinguish the Chaos or Atmosphere into two very different and distinct Regions: The lower and larger whereof would be a Collection, or System of dense and heavy Fluids, or a vast Abyss immediately encompassing the central solid Body: The higher and lesser would be a Collection, or System of earthy, watery, and aery Parts, confusedly mix'd together, and encompassing the said Abyss, in the same manner as that did the central Solid. And this I take to be the State of Darknes, which the Proposition we are upon mentions:

And

And that the *Chaos*, particularly the Face or upper Regions of it, were at this time in such a dark and caliginous Condition, will easily appear. For all those opaque or earthy Corpuscles which before rov'd about the immense Regions of the Atmosphere, and frequently even then obscur'd the Central Solid to any external Spectator, were now crowded nearer together; and instead of flying up and down in, or possessing a prodigious Orb or Expanse, were reduc'd to a narrow Sphere, and confin'd within a Space not perhaps in Diameter the hundredth Part of the former; and must by Consequence exclude the Rays of the Sun in another-guess manner than before. We cannot but observe in our present Air, that the very same Vapours which, when dissipated and scatter'd through the *Atmosphere*, (whose Extent yet is not so great,) freely admit the Rays of the Sun, and afford us clear and lightsome Days; when they are collected into Clouds, become opaque Masses, and are capable of obscuring the Sky, and rendering it considerably dark to us. In the same manner 'tis easy to suppose, that those opaque and earthy Masses, which in those vaster Regions would but in a less degree, and in some places, exclude the Beams of the Sun, must, when collected and crowded closer together on the Surface of the Abyss, exclude them in a degree vastly surpassing the former; must occasion an entire Darkness in all its Regions, and particularly in those upper ones, over which they were immediately collected. And if from the former Comparison we estimate how few Vapours collected into a Cloud with us will cause no inconsiderable degree of Darkness; and allow, as is but reasonable, a proportionably greater degree of Darkness to a pro-

portionably greater number of Earthy and Opaque Corpuscles crowded together; we shall not doubt but all manner of Communication with the heavenly Bodies, and the external World, must be entirely interrupted; and the least imaginable Ray or Beam of Light from the Sun excluded, not only from the lowest but even all, excepting the very highest Regions of this *superior Chaos*. Which State of Nature, belonging to this Time, immediately preceding the *Hexameron*, is not amiss represented by the *Theorist* in Plate IX. Fig. 2.

Theor. p.
36.

V. The visible Part of the First Day's Work was the Production of Light, or its successive Appearance to all the Parts of the Earth; with the consequent Distinction of Darkness and Light, Night and Day, upon the Face of it.

V. If we remember in what State we left the *Chaos* in the last Proposition, and suffer our Thoughts to run naturally along with its succeeding Mutations, we shall find that the next thing to be here consider'd, (for the Subterraneous System of dense Fluids, or the great Abyss, not coming directly within the Design of *Moses*, is not here to be particularly prosecuted any farther) is the Separation of this Upper and *Elementary Chaos*, or *Congeries* of Earthy, Watery and Aery Corpuscles, into two somewhat different Regions; the one a solid Orb of Earth, with considerable Quantities of Water in its Pores; the other an *Atmosphere* in a peculiar Sense, or Mass of the lightest Earthy, with the rest of the Watry and the Aery Particles, still somewhat confusedly mix'd together. For since this Upper *Chaos*, (tho' in general much lighter than the *Abyss* beneath) consisted of Parts very Heterogeneous, and of different specifick Gravities

ties (the Earthy being heavier than the Watery, and those yet heavier than the Aery Particles;) 'tis evident, that in the same manner that this whole mix'd Mass was separated from the heavier *Abyss* beneath, must it again separate and divide it self into two such general Orbs as were just now mention'd. The former consisting of the denser and solider Parts, such as the Earthy, Clay, Sandy, Gravelly, Stony *Strata* of the present Earth, with so many of the Watery Particles as either being already in those Regions must be enclosed therein, or could descend from above, and have Admittance into the Pores thereof: The latter of the less Solid, and lighter Earthy; with the rest of the Watery, and the Aery Particles, not yet sufficiently distinguish'd from each other. This Process will I suppose easily be allow'd, excepting what relates to the enclosing of many of the Watery Parts within the Earth; with relation to which, 'tis commonly suppos'd that because Water is specifically lighter than Earth, it must, in the regular Digestions of a *Chaos*, take the Upper Situation, and cover that highest Orb, as that would others of greater Gravity than it self. 'Tis also commonly imagin'd that the *Mosaick Cosmogony* favours such an *Hypothesis*, and supposes the Waters to have encompass'd the Globe, and cover'd its Surface, till on the third Day they were deriv'd into the Seas. Now, as I by no means apprehend any necessity of understanding the *Mosaick* Creation in this Sense; so I am pretty sure 'tis contrary to a Philosophical Account of the Formation of the *Chaos*; unless one of these two Things were certain, Either that the Quantity of Water were so much greater than that of the Earth, that all the Pores and Interstices of the latter could not contain it; or else that it was

generally elevated into the Air, in the Form of Vapour, and sustain'd there while the Earth settled and consolidated together, and did not till then descend and take its own proper place. The *former* of which is neither reconcilable to the *Mosaick* Creation, nor will be asserted by any who knows, even since the Deluge, how small the Quantity of Fluids in Comparison to that of the Solids is in the Earth on which we live. And the *latter* is too much to be granted in the present Case by any considering Person, who knows that a Comet's Vapours constitute the main part of that Tail or Mist, which is sometimes equal to a Cylinder, whose Basis is 100,000 Miles in Diameter, and its Altitude as far as from the Sun to the Earth, or about 81,000,000 Miles; (as it was in the last famous Comet in 1681, represented in Sir *Isaac Newton's* own Scheme;) let the Rarity of the same be suppos'd as great as any *Phænomena* shall require. For to clear this Matter by a familiar Instance or Experiment; Take Sand or Dust, and let them fall gently into a Vessel, till it be near full: Take afterwards some Water, and pour it alike gently into the same Vessel: and it will soon appear, that, notwithstanding the greater specifick Gravity of the dry and earthy, than of the moist and watery Parts, (whence one might imagine that the Sand or Dust would be the lowest, and the Water swim uppermost on the Surface of the other, without mingling therewith,) yet will the latter immediately sink downwards, and so thoroughly drench and satiate the said Mass before any will remain on the Top, that its Proportion to that of the Solid Parts will be very considerable. Which being apply'd to the Point before us, will take away all imaginable Difficulty in the Case: It be-
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ing evident, without this Comparison, that such watery Particles as were already intermix'd with the others would remain where they were; and with this, equally so, that many of the rest, which were above the same, upon the first Subsidence of the earthy *Strata* would penetrate, pervade and saturate the same. So that on this first *Day* or *Year* of the Creation, the earthy and denser Parts would take their Places lowest, on the Surface of the great Abyss; would settle in part into the same, and compose an Orb of Earth; and in its Interstices and little Cavities all such watery Particles as were already in this Region, or descended upon it before its Consolidation, would be enclos'd; and that as far above the Surface of the Abyss, to which they would be contiguous, as their Quantity could enable them to reach. On this first *Day* or *Year* also the upper Regions of the *Chaos*, being now in some measure freed from those earthy and opaque Masses which before excluded the same, and caused the before-mention'd thick Darknesh; would in some degree admit the Rays of the Sun. Now therefore that glorious Emanation, *Light*, the visible Part of this *Day's* Work, would begin to appear on the Face of the Earth: Now would it, by the annual Motion, successively illuminate the several Parts of it: And now would it consequently cause that natural Distinction between Darknesh and Light, Night and Day round the whole Globe, which was to be accounted for in this Proposition. Which Progress of the *Chaos*, and State of Nature is well enough exhibited by the Theor. p. Theorist in Plate X. Fig. 3. 38.

Corollary. Hence we may observe the Justness of the Mosaick Creation, and how fitly it begins at the Production of Light; without taking notice of such prior

prior Conditions, and such Preparations of the Chaos which have been before explain'd, and were in order of Nature previous to this Day's Work. For this Account reaching only to the visible World, and the visible Effects in it; and keeping still within the Bounds of Sense, and of common Observation, could not better be accommodated to the Truth of Things, and the Capacities of all, than by such a Procedure. The ancient Condition of the Chaos in former Ages was no way here concern'd, and so was entirely to be omitted. The State of Darknes which immediately preceded the six Days Work, and which, with relation thereto, was necessary to be mention'd, made a very proper Introduction, and so very fitly was to be hinted at by way of Preface thereto. Both which Cases are accordingly by Moses taken care of. And so the first Period was the Production of Light, the Admission of the Rays of the Sun, and the Origin of Day and Night depending thereon; as the Method and Decorum of Things, with the Apprehensions of the People, did both very naturally require. For since in this Sacred History of the Origin of Things, not only the Visible World, and the Visible Parts of it were singly concern'd; But principally the Effects to be enumerated were such as requir'd the Light and Heat of the Sun, the one to be View'd, the other to be Produc'd by; and without the latter could no more have Been at all, than been Conspicuous without the former; 'Twas very suitable, and very natural in the first place to introduce the Cause or Instrument, and afterwards in the succeeding Periods, to recount the Effects thereof in the World: First to acquaint us that the Light and Heat of the Sun were in some measure admitted into the upper Regions of the Chaos, and then to relate those remarkable Consequences thereof, which the succeeding Periods of the Creation exhibited on the Face of the Earth. Which Order of
Nature,

Nature, and Succession of Things, is accordingly very prudently and fitly observ'd, and kept pace with, in this sacred History.

VI. The visible Part of the Second Day's Work was the Elevation of the Air with all its contain'd Vapours; the spreading it for an *Expansum* above the Earth; and the Distinction thence arising of *Superior* and *Inferior* Waters; the former consisting of those Vapours, rais'd and sustain'd by the Air; the latter, of such as either were enclosed in the Pores, Interstices and Bowels of the Earth, or lay upon the Surface thereof.

VI. When at the Conclusion of the former Day the Heat of the Sun began considerably to penetrate the *Superior* Regions of the *Chaos*, and the two different Orbs, the solidier Earthy, and the fluidier Aery Masses, began to be pretty well distinguish'd, the same things would proceed still on this succeeding Day. The lower Earthy *Strata* would be settling somewhat closer together; the Watery Parts would subside, and where they could get Entrance, would saturate their inward Pores and Vacuities, and the *Atmosphere* would free it self more and more from the heaviest and most opaque Corpuscles, and thereby become in a greater degree tenuious, pure, and clear than before. Whereupon, by that time the Night, or first Part of this Second Day or Year was over, and the Sun arose, the Light and Heat of that Luminary, would more freely and deeply penetrate the Atmosphere, and become very sensible in these Upper or Aery Regions; which being suppos'd, the proper Effects which were to be next expected, must be, that vast Quantities of Vapours would be elevated into, and there sustain'd by the now better purify'd Air, and so increase the vast Quantities which were already there; while in the mean time all the Earthy Corpuscles which were un-

capable

capable of Rarefaction, and with them all such Watery Particles as were so near the Earth that the Sun's Power could not sufficiently reach them, were still sinking downwards, and the former increasing the Crassitude and Bulk of the solid Earth; and the latter, if the Earth was too solid to admit them, as by this Time it would probably be, flowing down apace, and covering all its Surface with Water. From all which, 'tis easy to account for the Particulars of this Day's Work. The *Expansum* or Firmament which was this Day spread out above the Earth, was plainly the *Air*, now truly so called, as being freed from most of its Earthy Mixtures. The *Superior Waters*, all those fresh ones, which in the Form of Vapour, a nine or ten Months Heat of the Sun, with the continual Assistance of the Central Heat, could elevate, and the Air sustain, besides those vast Quantities of Salt ones, which had never yet left those Regions. The *Inferior Waters* were those which were not elevated, but remain'd below, all that fell down with, were enclos'd in, sunk into, or lay upon the Orb of the Earth beneath. And when it is particularly said by *Moses*, that 'twas this *Expansum* or Firmament which was to divide the *Superior* from the *Inferior Waters*, that is exactly agreeable to the Nature of Things, and suitable to this Account: It being the *Air* which truly and properly sustain'd all those Vapours, as now it does the Clouds, above the Earth; and was thereby the Means of separating them from their Fellows in the Bowels, or on the Surface thereof. Neither has that Objection any weight in it, that the Waters in the Seas are called by *Moses*, *Waters under the Firmament*; and so must be of a different Nature and Original from those in the Air, which are *Waters above the Firmament*;
whereas

whereas I derive the one from the other, and suppose the Seas to have been once Vapour, and so part of the other Waters. For, certainly, if Vapours in the Air, or *Waters above the Firmament* fall down, become properly *Water*, and run down into the Seas, they must be allow'd to change their Name, and become *Waters below the Firmament*: I am sure this Change is no new thing, but has been continual from the Creation till our Times. Every Day Vapours become Rain, and run into Seas; and the Seas are every Day resolving into small Parts, and become Vapours; and so the *inferior* and *superior* Waters still communicate with and supply each other, and accordingly change their Denomination perpetually: Which State of the *Chaos*, or Progress of the Creation, is well represented by the *Theorist* in Plate X. Fig. 4.

Corollary 1. Hence appears a sufficient Reason why in this Six Day's Creation, one entire Day is allow'd to the Formation of the Air, and the distinguishing the Waters in the same, from those beneath; which has hitherto seem'd somewhat strange and disproportionate. 'Tis certain this Work requir'd as long a Time, and was of as great Importance as any other whatsoever: A great part of that Water which the Earth was to have in its Air, or upon its Surface, till the Deluge, being, 'tis probable, entirely owing to this Day's Elevation of it. For had it not been thus buoy'd up and sustain'd on high, it must have sunk downward, and so perhaps have been inclosed in the Bowels of the Earth, without Possibility of Redemption; and have rendred the Antediluvian World more like to a dry and barren Wilderness, than, what it was to exceed, a juicy, fruitful and habitable Canaan.

Coroll.

Coroll. 2. *Hence arises a new Confirmation that the Days of the Creation were Years also. For seeing the quantity of Water which was preserv'd above Ground, and fill'd all the Seas before the Deluge, was in great part the same which was this second Day elevated into Vapour; had this Day been no longer than one of ours at present, the foremention'd quantity would have been too little to saturate the Earth, supply the Rivers, and fill all the Seas, and about an half of it every Day would be wholly exhal'd afterwards, and suffer the Vegetable and Animal Kingdoms to faint and wither, if not to perish for want of Moisture. All which, in the Hypothesis we here take, is wholly avoided, and a very fit and suitable Proportion of Waters preserv'd above for all the Necessities of the Earth, with its Productions and Inhabitants.*

VII. The visible Parts of the Third Day's Work were two, the former the Collection of the *inferior* Waters, or such as were now under the Heaven, into the Seas, with the consequent Appearance of the dry Land; the latter the Production of Vegetables out of that Ground so lately become dry.

VII. In order to the apprehending of the *double* Operation of this Day, we must call to Mind what State the Orb of Earth was in by this Time. We have seen already that it had been settling together, and fixing it self on the Surface of the Abyss from the very Beginning of the Creation; and we ought to suppose that in the space of two Years it was not only become wholly distinct from the Abyss below, and the Atmosphere above it, but that it was settled and consolidated together, and its *Strata* grown firm and compacted. Nay that it was by the Cohesion of its Parts, grown solid some Time before all the lighter and remoter Earthly Parts were descended

descended upon it, as suppose by the end of the first Day. We must farther observe, that by reason of its Columns different Density, and Specifick Gravity, (attested to, *à priori* from the *Chaos's*, and *à posteriori* from the internal Earth's *Phænomena*,) it was settled into the Abyss in different degrees, and thereby became of an unequal Surface distinguish'd into Mountains, Plains and Vallies. I say it was *settled into the Abyss in different degrees*, but yet not near to such a degree as the Law of Specifick Gravity requir'd, as necessarily follows from what was now said, that the several Columns would be consolidated together the first Day, before all the lighter and remoter Earthly Parts which were to compose it were descended upon it on the Second, and perhaps afterwards also on part of the Third. Which things being suppos'd and consider'd, the two Works of this Day or Year of the Creation, which are of themselves very different, will be easily understood and reconcil'd. For when at Sun-set, or the Conclusion of the last Day, we left the Air by the nine or ten Months Power of the Sun elevating fresh ones, and by the great quantity of salt ones still remaining there from the Beginning, crowded with Vapours to a prodigious degree; upon the coming on of this Third Day, and in its Night or former part, the said vast Quantities of Vapours must needs descend, and so by degrees must leave the Air pretty free, and take their Places on the Surface of the Earth; altering thereby their own Denomination, and becoming of *Upper* or *Celestial*, *Lower* or *Terrestrial* Waters. Indeed if we do but allow the Effect to be in any measure answerable to the Time, we shall grant that in the two or three Months of Night, which is the former

*Vid. Lem.
81. cum
Coroll. &
Hypoth. 2.
prius.*

Part

Part of this Third Period of the Creation, the main Body of the Vapours must have not only descended down upon the Earth, but, by reason of the Inequality of its Surface, and the Solidity withal, have run down from the higher and more extant Parts, by the Declivities and Hollows, into the lowest Vallies, and most depressed Regions of all; must in these Places have compos'd the Seas and Lakes every where throughout the Surface of the Earth; and so by that Time the Light appear'd, and the Sun's Rising began the latter Part of this Day, the entire Face of the Globe, which was just before cover'd as it were with the descending Waters, must be distinguish'd into over-flow'd Vallies, and extant Continents, into Seas and dry Lands, that very Work of this Day we were in the *first* Place to enquire about. *The Waters under the heavens were now gathered together into their respective and distinct Places, and the dry land appear'd,* and became fit for the Production of the Vegetable Kingdom. Which therefore most naturally leads us to the *second* Branch of this Day's Work: For when thus far was compleated on the Night or former Part of this Day; (which the Absence of the Sun so long together rendred peculiarly and solely fit to permit and procure the Descent of Vapours;) and when at the same Time the dry Land was now distinguish'd from the Seas, and just become (in the utmost degree) moist and juicy; upon the Sun-Rising or coming on of the Day-time, 'twas of all other the most fit and convenient Season for the Germination of the Seeds of Vegetables, and the growth of Trees, Shrubs, Plants

Theor. 1. 1. and Herbs out of the Earth. The Soil, satur'd
p. 42. & and fatned by the foregoing half Year's Descent
1. 2. c. 7. of Vapours, was now like the *ἰλὺς*, that fruitful

Semi-

Seminary of the Vegetable and Animal Productions of Primitive Nature, so much celebrated by all Antiquity. Nine or Ten Months of the Sun's Presence together, was a Time as proper and as natural for such a Purpose as could possibly be desir'd. And when there was this Nine or Ten Months Day to spare in this Period of the Creation, after one Work was compleated; and the same was so very fitly prepar'd and dispos'd for the Production of Vegetables; 'tis no wonder that this above all the other Divisions has a double Task, and that the Seas and dry Land were distinguish'd, and the Vegetables produc'd on the same Day or Year of the Creation; according as from the *Mosaick* History the present Proposition asserts. And if we allow for the Defect of the Inequalities of the outward Surface, too small to be therein consider'd; and suppose the *Atmosphere* somewhat clearer than before; the former Figure will still serve well enough, and Theor. represent the Progress and State of the Earth at P. 39. ^{the} Conclusion of this *Third Day* also. ^{supra.}

Corollary I. *Since according to our present Accounts of these Matters, this is the only Day of the Creation to which a double Work, and that the one quite different from the other, ought to be ascrib'd, and is ascrib'd by Moses; The Night being peculiarly fit for the former, and the Day for the latter Operation; which could happen on none of the other Periods; This Exactness of Correspondence ought to be esteem'd an Evidence of the literal Sense of the Writer, and of his Accommodation to the Nature of Things; and a very considerable Confirmation of those Hypotheses on which it so naturally depends.*

Coroll. 2. *Hence arises a Confirmation of what* ^{Phænomen.} *was before asserted, that the Antediluvian Earth* ^{45. prius.}

had only lesser Lakes and Seas, not a vast Ocean. For since the Quantity of Waters belonging to the Earth and Air at first, was little more than was at once sustain'd by the Air; no one will imagine it sufficient to fill the entire Ocean alone, if there had been neither lesser Seas, nor Rivers to be supply'd therewith. And so, vice versâ, It having been prov'd by other Arguments, that there was no Ocean, but only lesser Seas, before the Flood, this Account which affords sufficient Quantity of Water for the latter, but not for the former, is thereby not a little confirm'd.

Coroll. 3. Tho' the Heat and Influence of the Sun was on this Third Day very great, yet was his Body not yet Visible. For since at his Rising the Earth and lowest Regions of the Air were very full of Moisture, while the higher Regions were very clear and bright, the Force of his Heat would be so great as to elevate considerable Quantities of Vapours on a sudden, and thereby (e're the lowest Air had deposited its Vapours, and rendred it self transparent) the Sun would anew hide himself in a thick Mist, and so prevent his own becoming conspicuous, which otherwise 'tis not improbable he might this Day have been.

VIII. The Fourth Day's Work was the Placing the Heavenly Bodies, Sun, Moon and Stars, in the *Expansum* or Firmament, *i. e.* The rendring them Visible and Conspicuous on the Face of the Earth: Together with their several Assignations to their respective Offices there.

VIII. Altho' the Light of the Sun penetrated the Atmosphere in some sort the first Day, and in the succeeding ones had very considerable Influence upon it; yet is it by no means to be suppos'd that his Body was Visible all that while. Tho' we every Day enjoy much more Light and Heat from the Sun than the Primitive Earth could, for a considerable space, be suppos'd to have

have done, yet 'tis but sometimes that the Air is so clear as to render his Body discernible by us. A very few Clouds or Vapours gather'd together in our Air are able, we see, to hinder such a Prospect for Weeks, if not Months together; while yet at the same time we are sufficiently sensible of his Force and Influence in the constant Productions of Nature. Which things being duly consider'd, and the Vastness and Density of the *Upper Chaos* allow'd for, 'twill be but reasonable to afford a great Space, even after the first Penetration of Light, for the entire clearing of the Atmosphere, and the distinct view of the Sun's Body by a Spectator on the Surface of the Earth. I suppose no one will think the two first *Days* or *Years* of the Creation too long for such a Work; or if any one does, the particular Work and State of the Atmosphere on the second Day will prevent the most probable part of such a Surmise, and shew the Impossibility of the Sun's Appearance at that Time. And the same reason will in a sufficient, tho' a less degree prevent any just Expectations on the *third Day*, as was observ'd in the last *Corollary*. But now upon the coming on of this *fourth Day*, and the Sun's Descent and Abode below the Horizon for two or three Months, those Vapours which were rais'd the Day before must fall downwards, and so before the Approach of the Morning leave the Air in the greatest Clearness and Purity imaginable, and permit the *Moon* first, then the *Stars*, and afterward, upon the coming on of the Day, the *Sun* himself most plainly to appear and be conspicuous on the Face of the Earth. This *fourth Day* is therefore the very Time when, according to this Account, and the sacred History both, these Heavenly Bodies, which were in Being before,

but so as to be wholly Strangers to a Spectator on Earth, were rendred visible, and expos'd to the view of all who should be suppos'd to be there at the same time. They now were in the Sacred Style, *placed in the Firmament of Heaven, gave Light upon the Earth; began to rule plainly and visibly over the Day, and over the Night, and to divide the Light from the Darknefs;* as ever since they have continu'd to do. And now the inanimate World, or the Earth, Air, Seas, and all their Vegetable Productions are compleat; and the Tradition of those *Chineses* who inhabit *Formosa*, and other Islands, appears well-grounded, and exactly true, who hold, that the World, when first created, was without Form or Shape; but by one of their Deities was brought to its full Perfection in four Years. And certainly this entire Constitution of the whole corresponds excellently with the Poet's Description of it, which is also a surprizing Testimony to the whole *Hypothesis* hereto relating :

Atlas Chi.
Part 2.
P. 46.
Apud War.
Geolog.
p. 58.

Ovid. Me-
tamorph.
l. 1.

*Ignea convexi vis, & sine pondere Cæli
Emicuit, summaque locum sibi legit in arce :
Proximus est ær illi gravitate locoque :
Densior his Tellus, Elementaque Grandia traxit,
Et pressa est gravitate sui : Circumflus Humor
Ultima possedit, solidumque coercuit orbem.*

Theor.
P. 41.

Which Progreß of the Creation, and State of Nature, is exactly represented by the *Theorist's* fifth and last Figure.

IX. The Fifth Day's Work was the Production of the Fish and Fowl out of the Waters; with the Benediction bestowed on them in order to their Propagation.

IX. The Terraqueous Globe being now become habitable both to the Swimming and Volatile Animals, and the Air clear, and so penetrable by
that

that compleat Heat of the *Sun*, which was requisite to the Generation of such Creatures; 'tis a very proper Time for their Introduction. Which was accordingly done upon this fifth *Day* or *Year* of the Creation. Those Seeds, or little Bodies of Fish and Fowl which were contain'd in the Water; (or moist fruitful *Ἰλὺς*, of kin to it) were now expos'd to the kindly Warmth of the *Sun*, and the constant supply of a most gentle and equal Heat from beneath; they were neither disturb'd by the sudden Alteration of the Temperature of the Air from the Violence of Winds, nor by the Agitations of the Tide, (which was both very small in these small Seas; and by reason of the Absence of the *Diurnal Rotation*, imperceptibly easy, gentle, and gradual;) these Seeds, I say, when invigorated with the Divine Benediction, became now prolifick; and in this Fifth Day's time, a numerous Offspring of the swimming and volatile Kinds arose, whereby the two fluid Elements, Water and Air, became replenish'd with those first Pairs, which by the Benediction they straightway receiv'd, were enabled to become the Original of all of the same Kinds, which ever were to be the Inhabitants of those Regions afterwards. Which Time and Procedure is no less agreeable to the State of the World in our *Hypothesis*, than 'tis to the express Affirmations of *Moses*, who makes Fish and Fowl the sole Product of the Fifth *Day* or *Year* of the Creation.

- X. The Sixth Day's Work was the Production of all the Terrestrial or Dry-Land Animals; and that in a different manner. For the Brute Beasts were produced out of the Earth, as the Fish and Fowl had been before out of the Waters: But after that, the Body of *Adam* was formed of the Dust of the Ground; and by the Breath of Life breath'd into him in a peculiar manner, he became a Living Soul. Some time after which, on the

same Day, he was cast into a deep Sleep, and *Eve* was form'd of a Rib taken from his side. Together with several other things, of which a more particular Account has been already given on another Occasion.

X. The Earth being now grown more solid, compact, and dry, its Surface distinguish'd into Sea and Dry-land, each of which were stor'd in some sort with Inhabitants and Vegetables, the Air being fully clear, and fit for Respiration, and the other Dispositions of external Nature being equally subservient to this, as well as it had been before to the last Day's Productions; 'twas a proper Season for the Generation of the *Dry-land Animals*, and the Introduction of the noblest of them, *Man*; which accordingly were the first Works, on this Sixth Day or Year of the Creation. Any more particular Account of which, or of the following Works, is not so directly the Design of this *Theory*, and so shall not be here farther insisted on. We may only take notice of two Things; the one is the peculiar *Manner*; the other the peculiar *Time* for the Creation of Man. As to the *former*, tho' 'tis granted that all the other Days Works mention'd by *Moses*, were generally brought to pass in a natural way, by proper and suitable Instruments, and a mechanical Process, as we have seen through the whole *Series* of the foregoing Creation; yet 'tis evident, as has been already observ'd, that an immediate and miraculous Power was exercis'd in the Formation of the Body, and Infusion of the Soul of Man, as well as in some other particular Cases belonging to this Origin of Things. In plain Terms, I take it to be evident, that the same $\Lambda\omicron\gamma\textcircled{\text{C}}\ \Theta\epsilon\acute{\alpha}\nu\theta\epsilon\omega\pi\textcircled{\text{C}}$, our Blessed Mediator, who was afterward very frequently conversant on Earth, appear'd in a human Form to

the

Solut. 2.

prius.

Vid. John

i. 18. and

v. 37. and

vi. 45, 46.

Matth. xi.

27. 1 Joh.

iv. 12.

Rom. i. 20.

Col. i. 15.

1 Tim. i.

the Patriarchs, gave the Law in a visible Glory, 17. and vii.
 and with an audible Voice on Mount *Sinai*, 15, 16.
 guided the *Israelites* personally in a Pillar of Fire, with
 and of a Cloud through the Wilderness, inhabit- Exod. iii.
 ed between the *Cherubim* in the Holy of Holies, and xix.
 and took the peculiar Style, Title, Attributes, and xx.
 Adoration, and, to others, incommunicable Name and xxiv.
 of the God of *Israel*, and at last was Incarnate, 10, 11. and
 liv'd truly like a Man amongst us, died for us, and xxxiii. 9,
 ascended into Heaven, makes still Intercession 10, 11,
 for us with the Father, and will come to judge the 12, 13.
 World in Righteousness at the last Day: That Numb.
 this very same Divine Person was actually and xii. 5, &c.
 visibly, in a Human Shape, and conversant on and xiv.
 Earth, and was truly and really employ'd in this 14. Gen.
 Creation of the World, (and particularly in this ii. and iii.
 peculiar Formation of Man) so frequently ascrib'd and xviii.
 to him in the Holy Scriptures. It being both un- and xix.
 fit and impossible for the Divine Nature of the and xxxii.
 Father, to be so much, and in such a manner 24, &c.
 concern'd with the Corporeal World, and the sin- Deut. iv.
 ful Race of Mankind, as we find here and every and v.
 where this *Divine Person*, our Blessed Mediator, Vid. Prov.
 to have been; as the Texts here quoted compar'd viii. 22, 32.
 together do, I think, fully prove. Seeing, there- Heb. i. 1, 2.
 fore, our Saviour Christ, God-Man, was perso- with xi. 3.
 nally present, and actually employ'd in this Col. i. 14,
 Primitive Creation of the World: Seeing Man 15, 16, 17.
 was to be a Creature entirely different from all John i. 1,
 the rest, a Being compounded of a Spiritual and 2, 3.
 Immortal Soul, and of a Material and Corrupti- Heb. i. 10,
 ble Body: Seeing in both these he was to be made 11, 12.
 in the Likeness of that Divine Person who was Euseb.
 the Instrument of the Father in his Creation, and Hist. Ec-
 to be constituted his Deputy and Vicegerent cles. i.
 among the Creatures here below; 'twas but rea- c. 1, 2.
 sonable there should be as great a Distinction in

his Original, as was to be in his Nature and Faculties, his Office and Dignity, his Capacities and Happiness from the other Parts of the Visible Creation; and by consequence, that peculiar Interposition of God himself in the Formation of the Body, and Infusion of the Soul of our first Parents, so particularly observable in the *Mosaick* History, is both very agreeable to the Nature of Things, very suitable to the Wisdom of God, and very reconcileable to the most Philosophick Accounts of this Origin of the World; and withal, a remarkable Token of the Dignity of Human Nature, of the Distinction between his Soul and Body, and of the great Condescension and Love of God towards us, and so the most highly worthy of our Consideration. Neither is the other Circumstance, the peculiar *Time* of the Creation of Man, to be pass'd over without a proper Reflexion on it. 'Twere easy to shew, that none of the preceding Days were, in any degree, so fit for, nay, most of them, not capable of this Creation and Introduction of Man: But upon this Sixth Period, when every thing which could be subservient to him, and advance his Felicity, was compleated; he who was to be the Lord of All, and for whose Sake the whole was fram'd, was brought into the World. When the *Light* had been penetrating into, and clarifying this dark and thick *Atmosphere* for more than five compleat *Years* together; when the Air was freed from its numberless Vapours, and become pure, clear, and fit for his Respiration; when the *Waters*, as well *superior* as *inferior*, were so dispos'd as to minister to his Necessities by Mists and Dews from the Heavens, and by Springs and Rivers from the Earth; when the *Surface of the Earth* was become dry and solid for his Support, and was
cover'd

cover'd over with Trees, Shrubs, Plants, Herbs, Grafs and Flowers for his Sufenance and Delight; when the glorious *Firmament of Heaven*, and the beautiful System of the *Sun*, *Moon* and *Stars*, were visible and conspicuous to him, the Objects of his Contemplation, the Distinguishers of his Seasons; by whose powerful Influences the Earth was invigorated, and the World rendred a fruitful and useful, a lightsome and pleasant Habitation to him; when, lastly, *all sorts of Animals* in the *Seas*, in the *Air*, or on the *Earth*, were so dispos'd as to attend, benefit, and please him one way or other; when, I say, all these things were by the Care, Beneficence, and Providence of God, prepar'd for the Entertainment of this principal Guest, then, and not till then, was *Man* created and introduc'd into the World: Then, and not before, was *He* constituted the Lord and Governor of the whole. In which entire Procedure the Wisdom and Goodness of the Creator, and the Dignity and Honour of his principal Creature here below, are equally consulted; and the greatest Occasion imaginable given to our first Parents, and all their Posterity, of adoring and celebrating the Divine Bounty to them in the present and succeeding Ages. Which naturally leads us to the next Proposition.

XI. God having thus finish'd the Works of Creation, rested on the Seventh Day from the same; and sanctified or set that Day apart for a Sabbath, or Day of Rest, to be then and afterward observ'd as a Memorial of his Creation of the World in the Six foregoing, and of his Resting or Keeping Sabbath on this Seventh Day. Which Sabbath was reviv'd, or at least its Observation anew enforc'd on the *Jews*, by the Fourth Commandment.

XI. Nothing sure could be more fit and proper at this Time than the praising and worshipping

ping of that powerful and munificent Creator, who in the foregoing Six Days Productions had so operously and so liberally provided for the Well-being and Happiness of Mankind. And seeing this entire Fabrick was design'd for the Use and Advantage of all succeeding Generations, as well as the present, it could not but be reasonable to devote one Period in seven to the peculiar Worship and Service of that God who was both the Author of the Works themselves, and of this Institution of the Sabbath, to perpetuate the Memory of such his Six Days of Work, and of this Seventh of Rest, to all future Generations. What relates to the Fall of *Adam*, and the entire Moral State of the World, comes not within the Compass of this Physical *Theory*, and so (notwithstanding it naturally enough belongs to this Day, and might, I imagine, be shewn not to be so difficult, as, for want of a right Understanding thereof, 'tis usually imagin'd to be, and that without receding from the literal, obvious, and usual Sense of Scripture) must be wholly omitted in this Place.

XII. There is a constant and vigorous Heat diffused from the Central towards the Superficiary Parts of our Earth.

Lem. 68. XII. This has been already accounted for, and
& Hyp. 1. need not here be resum'd.

Arg. 7.
prius.

XIII. The habitable Earth is founded or situate on the Surface of the Waters; or of a deep and vast subterraneous Fluid.

Lem. 74,
&c. &
Solut. 5, 6,
7. prius.

XIII. This has been sufficiently explain'd already, and is observable in the foregoing Figures of the four latter Periods of the *Mosaick* Creation. But if it be requir'd to state the Proportions of that Subterraneous Fluid, with that of the Central Solid, and of the Upper Earth, I must say, that

that I esteem the Upper Crust to be not above 50 or 100 Miles deep, and the dense Fluid about the like Dimensions: But as to the larger Central Solid, which includes another rarer Fluid, and a Central *Loadstone*, as I have shewn in my *Discovery of the Longitude and Latitude by the Dipping-Needle*, this is not a Place to discourse more largely upon it.

XIV. The interior or entire Constitution of the Earth is correspondent to that of an Egg.

XIV. This is also very easily observable in the same Figures: Where (1.) the *Central Solid* is answerable to the *Yolk*; which, by its fiery Colour, great Bulk, and innermost Situation, exactly represents the same: Where (2.) the great *Abyss* is analogous to the *White*; whose Density, Viscosity, moderate Fluidity, and middle Position, excellently expresses the like Qualities of the other: Where (3.) the *upper Orb*, or habitable Earth, corresponds to the *Shell*, whose Lightness, Solidity, little Inequalities of Surface, and uppermost Situation, admirably agree to the same.

XV. The primitive Earth had Seas and Dry-land distinguish'd from each other in great measure as the present; and those situate in the same places generally as they still are.

XV. The former Part of this has been already Solut. 7, sufficiently explain'd; and of the latter part prius. there can then be no reason to make any question; since the same Earth that was made at first, does still, as to its main Parts, remain as it was to this Day.

XVI. The primitive Earth had Springs, Fountains, Streams, and Rivers, in the same manner as the present, and for the main usually in or near the same places also.

XVI. The Origin of Fountains and Rivers is undoubtedly either from Vapours descending from

from *without* the Surface of the Earth, or from Steams elevated by the Heat *within*. And which way soever we chuse to solve the present, 'twill also serve to solve the primitive *Phænomena* here mention'd. 'Tis only to be observ'd, that before the upper Earth was chap'd and broken at the commencing of the *Diurnal Rotation*; and, indeed, before the *Strata* became so firmly consolidated as they afterwards were, the subterraneous Steams would arise, and pass through the same more uniformly, and more easily, and so more equally dispense their Waters over every Part and Region of the Earth, than afterward.

Corollary. *If therefore Dr. Woodward be right in asserting, That the Cracks and Fissures, which he calls perpendicular ones, since the entire Consolidation of the Strata of the Earth, are necessary to the*

Origin of Springs, (and I believe he may have good Grounds for his Opinion;) From the Being of such Springs and Fountains after the Consolidation of the Strata, and before the Flood, 'tis evident, that the Diurnal Motion did not commence till after the Annual; nay, till after the Formation and Consolidation of the Earth, and so what on other Grounds was before rendred highly probable, will appear nearer to Certainty on This: For 'tis plain, if the present Diurnal Motion commenc'd either with the Annual, or indeed any time before the Formation of the Earth, the Figure of the Chaos, and so of the Abyss and Upper Earth, would originally be that of an Oblate Sphæroid, as it is now; the Strata would be all coherent, united, and continued, without any Cracks or perpendicular Fissures at all; and the Origin of Springs, on the Doctor's Grounds, must in a natural way, be plainly impossible. Since therefore the Diurnal Rotation's commencing after the Consolidation of the Strata gives a Mechanical and Natural Account

Essay, p.
121, &c.
and p. 152.

...

Vid. Lem.
70, 71, 72.
prius.

Account of the Chaos and perpendicular Fissures; since without the same in the present Case no natural Cause of them is by any assigned; since withal 'tis unquestionable that there were Springs and Rivers before the Flood; and since, lastly, it appears that such Fissures were necessary to the being of those Springs and Rivers, 'tis very reasonable, nay necessary to suppose, that the Diurnal Rotation did not commence till after the Formation and Consolidation of the Earth was over; or, which is almost all one, till the Fall of Man, as we formerly asserted.

Hypoth. 3.
prius.

XVII. The Primitive Earth was distinguish'd into Mountains, Plains and Vallies, in the same manner, generally speaking, and in the same Places as the present.

XVII. This has been sufficiently explain'd already, and need not here be reassum'd. And that each of these Seas, Springs, with their Rivers, and Mountains, were generally the same, and in the same Places as the present, there is no reason to doubt; they being usually the very same Individuals then and now, and so unquestionably cannot have chang'd their primary Situations.

Lem. 74.
&c. and
Solut. 7.
prius.

XVIII. The Waters of the Seas in the Primitive Earth were *Salt*, and those of the Rivers *Fresh*; as they are at present, and each, as now, were then stor'd with great Plenty of Fish.

XVIII. This has no Difficulty in it, seeing the present Seas are either the very same, or at least of the same Nature; and both would become Salt in the same manner, by the Dissolution of the Saline among the other Mineral Particles in the Fluid *Chaos*, or Atmosphere of a Comet. As to the Rivers, they arose then and now in the same manner; and the Inhabitants of the present Seas and Rivers seem to be no other than the Spawn or Offspring of those Primitive ones.

XIX.

XIX. The Seas were agitated with a like *Tide*, or *Flux* and *Reflux*, as they are at present.

Lem. 82.
cùm Co-
rol. priùs.

XIX. The Prefence of the *Moon* and *Sun* being the Cause of the Tides, and those Bodies by consequence being equally dispos'd before, as since the Deluge, to produce them, this Proposition can have no manner of Difficulty, only we may take notice of these two things, (1.) That in the State of Innocence, before the Diurnal Revolution began, the Frequency of the Tide must depend on the *Lunar* Period, and happen but twice in each Month, as now it does in somewhat above a Day's Time with us: On which account, the Increase and Decrease of the Waters would be extremely gentle, leisurely, and gradual, without any imaginable Violence or Precipitation. (2.) That in the whole *Antediluvian* State, the Tides were lesser than since, by reason of the Smallness of the Seas *then* in Comparison of the great Ocean, from whence *now* the most considerable ones are deriv'd. All which yet hinders not but they might be sensible enough in some Creeks, Bays, and Mouths of Rivers: The peculiar Circumstances of those Places in *that*, as well as in the *present* State, rendring the Tides, the Elevations and Depressions of the Waters *there*, most considerable and violent of all others.

XX. The Productions of the Primitive Earth, as far as we can guess by the Remainders of them at the Deluge, differ'd little or nothing from those of the present, either in Figure, Magnitude, Texture of Parts, or any other correspondent Respect.

XX. These things seem to depend on two Particulars, *viz.* partly on the primary Bigness, Figure, and Constitution of the constituent, insensible Parts or Elements of Bodies; and partly
on

on the Quantity of Heat made use of in their Production or Coalition; which being suppos'd, the Proposition will easily be establish'd. For, as to the first, I suppose they remain invariably the same in all Ages, and are by any natural Power unalterable. And as to the last, whatever is to be said of the State of Innocence, or the first Ages succeeding, on some peculiar Accounts, which I believe might be warmer than at present; yet as to the Times here referr'd to, there is no need to suppose any great Difference of Heat, either from the *Sun*, or the Central Body: And, indeed, all the Difference on any Accounts to be suppos'd between the Heat before and since the Deluge, must be too inconsiderable to be taken notice of in any such sensible Effects as this Proposition does refer to. For the *Sun's* Heat was not above a twenty-fifth Part greater than 'tis now, and the Space of four or five thousand Years makes no mighty Difference in that of the Central Solid, if at first it were heated any whit near the degree mention'd in the Calculation referr'd to in the Margin. And tho' its real Heat were decreas'd, yet in case its Facility of Penetration were increas'd in the same Proportion, the Heat on the Face of the Earth would still be equal and invariable. And so by these Accounts, the Productions of Nature in all Ages must be pretty equal and agreeable, as this Proposition requires.

Corollary. *Tho' the Lives of the Antediluvians were so much longer than ours at present, yet were they not generally of a more Gigantick Stature than the past or present Generations since have been. In all which Ages, notwithstanding, there have been some of an extraordinary Bigness and Stature; and there will be still no doubt in the future Ages to the end of the World.*

XXI. The Primitive Earth had such *Metals* and *Minerals* in it, as the present has.

XXI. This is easily accounted for. For since the *Antediluvian*, and the present Earth, are either the very same as to the lower Regions, or at least of the same Nature, the Offspring of a Comet's *Atmosphere*, (as even that acquir'd Crust at the Deluge was) 'tis no wonder if each of them contain, generally speaking, the same *Species* of Bodies within it.

XXII. Arts and Sciences were invented and improved in the first Ages of the World, as well as they since have been.

XXII. There is little need of giving particular Reasons for this. All I shall observe is, That seeing the Ignorance and Barbarity of the Ages after the Deluge, is the greatest Objection against this Proposition, 'tis avoided in our *Hypothesis*. The insensible, tho' prodigious Change of the State of Nature, and the perishing of most of the Monuments of the old Learning or Arts at the Flood, with the want of Correspondence in the *Post-diluvian* Tropical Year, to the Tradition of the *Antediluvian* one, compelling the few Remainders of the former State, being only eight in Number, to seek anew for their Learning, notwithstanding it might have been cultivated and improv'd to a great degree before the Deluge; as therefore in all Probability it really was.

CHAP. II.

A Solution of the Phænomena relating to the Primitive State of the Earth.

XXIII. The *Primitive* State of the Earth admitted of the primary Production of Animals out of the Waters and Dry Ground, which the subsequent States, otherwise than in the ordinary Method of Generation, have been incapable of.

XXIII. 'TIS not to be expected that I should here be able to give a full and methodical Account of the Growth of the *Primitive* Pairs of Animals, and of the several Dispositions of the *Primogenial* State of Nature subservient or contributory thereto. The Method of the Generation of Animals is in it self in general so little known, and the History of this first Stage of the World, as well so short in the Sacred Writings, as so difficult to be, in all its Circumstances, now otherwise understood, that such an Attempt might justly be look'd upon as too rash a Presumption. All that ought to be expected, and all that I shall endeavour is this; to shew, that as far as is known of that Original Earth, its Properties were as peculiarly fit for, as those opposite ones of the succeeding are capable of, such a Production of Animals at first, as this Proposition takes notice of; which the Five following Particulars shall include. (1.) The long and continued Spaces of Day and Night in the *Primitive* State did capacitate it for such Productions; which the quick Returns of the same afterward prohibited. 'Twill be easily granted, that in

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the

Hypoth. 3.
prius.

Solut. 7.
prius.

the Generation of Animals, there must be a pretty constant and continual Warmth, without the frequent Interposition of Cold during the most part of the Process. Now this the long Days of nine or ten Months afforded these primary *Embryo's*; which the short ones of only twelve small Hours, and the sudden and frequent Returns of equal Nights, has utterly deny'd to any such ever since. (2.) The *Primitive* Earth was moist and juicy enough to supply Nourishment all the Time of the Generation of the *Fætus*; which, after it was once become perfectly dry and solid, was not again to be expected. It was before observ'd, that upon the Descent of the vast Quantities of Vapours on the third Day, the Ground was so tender, soft, and full of Juices, as very naturally answered to what all Antiquity made the Fund and Promptuary of the rising Plants and Animals, the famous 'Ιλὺς. And as that was but a necessary Qualification of a Soil which was to produce Animals, so the want of it ever since has taken away all Hopes of a like Propagation. (3.) The *Primitive* State of the Earth and Air, where the Animals were produc'd, had Heat sufficient for that Purpose, which the subsequent has not. 'Tis evident that a greater Heat than the present Earth or ambient Air can afford, is requisite to, and made use of in the present Generation of Animals, (which the Incubation in the Oviparous, and the still warmer Position of the *Fætus* in the Viviparous Animals assure us of:) On which Account the present Earth must needs be incapable of their Production. But that the Heat in the *Primitive* Earth, and particularly where the Animals were produc'd, was much greater, will thus appear. As to the Heat from the Central Body, while
the

the Earth was somewhat loose, and pretty freely admitted the ascending Steams, that would be considerably greater than after its more entire Consolidation, when these Steams were thereby so much confin'd within, or diverted to some particular Receptacles. Besides the Production of Animals was near *Paradise*, and, I suppose, no where else. Now those middle Regions, (of which *Eden*, the Country of *Paradise*, was one) ^{Hypoth. 4.} being situate near the ancient Ecliptick, and ^{prius.} present Tropick, (of which before) enjoy'd also a greater Heat from the same Central Body, by reason of their greater Nearness thereto, than since, they, or the corresponding Parts of the *Torrid Zone* do, or can partake of. For since the Earth was then perfectly Spherical, the middle, and their neighbouring Parts, were about 15 ^{Lem. 70,} or 16 Miles nearer the Central Solid than the ^{71. cum} same Regions now are: (They being in that ^{Corol.} Proportion elevated, and the Circumpopular depress'd at the commencing of the *Diurnal Rotation* :) Which greater Vicinity of the Central Heat must certainly have a suitable Effect, and cause somewhat warmer Regions thereabouts than they have been ever since. Moreover, if the real proper Heat of the Central Solid be in any considerable Proportion diminish'd in near 6000 Years Time, (as in *some* Proportion it must be) that Degree of Heat which it had at first, was still the most powerful of all other ever since. But then as to the Solar Heat, 'tis evident that *Paradise*, situate near the very Ecliptick it self, must receive almost the utmost Power of the same Heat which any part of the Globe were capable of, which by lying beyond the Tropick afterward it would not do. On all which Accounts join'd together, 'tis evident that the Heat

in the *Primitive* State was much more considerable, and so much more adapted to the Generation of Animals than that in the subsequent ever was or can possibly be. (4.) The *Primitive* State was perfectly still and calm; free from all such Winds, Storms, violent Tides, or any the like Hurries and Disorders as at present wholly render the Production of Animals impossible: Which quiet Condition, if in some respects it endur'd till the Deluge, yet, as even in those the Paradisiacal State might have the Pre-eminence; so in others, particularly the Gentleness of the Tides, it had still the most peculiar Advantage; as was before observ'd. (5.) The Equability of Seasons, and the greater Uniformity of the Air's Temperature, which in part remain'd till the Deluge, but might be more signal in the *Paradisiacal* State, render'd that Earth as proper, as the contrary sudden, uncertain, and violent Extremes of Heat and Cold, Drought and Moisture, sultry and frosty Weather now, wholly indispose it, for such a Production of Animals. Which Prerogatives of the *Primitive* Earth and Air will certainly demonstrate, if not its entire Fitness, yet sure its less Unfitness for such an original Generation as was here to be accounted for; and is all, as was before observ'd, that can justly be requir'd and expected in the present case.

Corollary. *Since it has been before allow'd that all Generation is but Nutrition; and that all Seeds, as well of Animals, as of Plants, are the immediate Workmanship of God; 'tis evident that this Supposition of the original Production of Animals out of the Waters and Earth; according to the plainest Letter of the Mosaick History, does by no means derogate from the Divine Efficiency, and the wonderful*

derful Art and Skill into the Structure of their Bodies; nor in the least favour that ungrounded and pernicious Opinion of the Equivocal or Spontaneous Generation of any of them.

See Dr.
Bentley's
Serm. 4.

XXIV. The Constitution of Man in his *Primitive State* was very different from that ever since the Fall; not only as to the Temper and Perfections of his Soul, but as to the Nature and Disposition of his Body also.

XXIV. The Book of *Genesis* affords us so short a History of this *Primitive Stage* of the World, and of the Constitution of Man therein; and all other Histories are so inconsiderable in this respect, that a particular Account of all things relating to this Proposition is by no means to be expected. 'Tis in general sufficient, that we have, from Sacred and Prophane Authority, evinc'd the State of External Nature to have been mighty different from the present; and that consequently the State of Man, even on Philosophical Considerations, ought to be suppos'd equally different from the present also. And 'tis so highly unreasonable from meer Observations made now to pass a Censure on what was done then; and from the frail, imperfect, sinful, and miserable Condition of human Nature in our Days, to judge of the same in its State of Innocence, Perfection and Felicity; or from the Circumstances it is in at present, to determine those it must at that Time have been in; that nothing can be more so. We might almost as well argue, that *Angels* eat and drink, sleep and wake, work and rest, because *We* do so; or that the *Infant* in the Womb sees and hears, talks and discourses, reads and writes, because afterward *He* commonly does the same things; as that because *We* have

Lem. 73.
cum Co-
roll. &
Hypoth. 3.
prius.

need of Cloathing to cover our Shame, and have inflexible, robust, and in a certain Time corruptible Temperaments of Body, therefore so had our *Primitive Parents* in the State of Innocency. But to speak somewhat more distinctly to those two Particulars included under this Proposition. (1.) That in the Actions relating to the Propagation of the *Species*, there should be no Sense of Shame, and consequently no Occasion for covering such Parts as were therein concern'd, is by no means strange, in a State of Innocence; where there was no Inclination to any sinful Kind or Degree of Application, and where all such *Inferior* Appetites were in compleat Subjection to the *Superior*, the Reason and Conscience of Man. 'Tis rather an evident Token of our Guilt, a Demonstration of the Disorder and Pollution of our Nature and Faculties *now*, that what in permitted Circumstances, is innocent and natural in it self, nay necessary for the Propagation of the *Species*, and the Preservation of Mankind, should make us blush: 'Tis a plain Note of the Vileness of our present State, a Mark of the Baseness of our Condition *now*, that what God and Nature have ordain'd for the Continuation of the World, should yet inevitably seem to have something of Indecency and Turpitude adhering to it: So far, that meer Bashfulness and Modesty oblige us to conceal and pass over in Silence all that belongs thereto. It indeed might more reasonably be made a Query, why the Covering of our Nakedness has been so general, and is so necessary *now*, (as it has justly by all Ages and Nations been esteem'd,) than why it was otherwise in this *Primitive* State of the World. (2.) That the use of one sort of Food (that of the *Tree of Life*) might be capable

pable of fixing and settling the Temper of a human Body, of rendring it so lasting, that, while its earthly Condition was to continue, it might never be dissolv'd; and that the Use of a contrary sort of Food, (that of the *Tree of Knowledge of Good and Evil*,) might be capable of so far corrupting and disordering the same, that it would become subject to Sickness, Misery, and Dissolution in a shorter Space, is, I think, even by what we at present see, by no means incredible. We cannot but observe how great a Change a Course of Diet, moderate, wholesome, and agreeable, will make in our present Temperament for the better; and on the contrary, how far an intemperate, and immoderate Indulgence of our Appetites, either as to the Kinds or Quantities of our Meats and Drinks, tho' but for a few Weeks or Months, will do the same for the worse; even to the spoiling and destroying of a very good Habit of Body, to the depriving Men of their Healths, nay frequently of their Lives too by a violent Disease. If we therefore, to take the narrowest Supposition, imagine the eating of that pernicious and forbidden Fruit to have been confin'd to one Day or Year of this Primitive State, (which yet there is no Necessity of doing;) 'twill be no harsh or incredible Supposal; especially, if we consider what has been said of the present State of Things, and how much more the Temper of our first Parents Bodies, and the particular Food on which they fed, might be peculiarly fitted for the same Purposes; that the intemperate Indulgence of a very pestilent Course of Diet for so many Months together might break and pervert the well-temper'd Constitutions of our first Parents, might render their Bodies liable to such

Distempers as in Length of Time would dissolve, and entirely overthrow them; or, in other Words, would *render Mankind sickly, miserable, and mortal Creatures for ever after*. Which is, I think, enough to clear the Proposition before us, so far as a bare *Physical Theory* is concern'd therein.

XXV. The Female was then very different from what she is now; particularly she was in a State of greater Equality with the Male, and little more subject to Sorrow in the Propagation of Posterity than he.

XXV. That the original State and Circumstances of the Female, should be as they are here represented, is so far from being strange, that the contrary ones of that Sex at present, were not the Occasion thereof known, might much more justly appear so. For granting the Equality of human Souls in themselves, 'tis not very easy to give a good reason, why that Part which one half of Mankind was to bear in the Propagation of it, should subject it to such a low Condition, great Weakness of Nature, and those severe Pains and Agonies which did not at all affect the other; as God and Nature have at present made unavoidable. And as to the Change of her Name after the Fall, from *Adamah* and *Ishshah* to *Eve* (which latter seems to denote her Capacity then attain'd of becoming the Mother of all those Generations of Mankind which were afterward to live on the Face of the Earth,) it may probably intimate, (to omit any other Observations that might be made on it,) some Change in the Method or Circumstances concerning human Generation. And if we consider, that *Adam* and his *Wife* were no inconsiderable Time in Paradise together, even after the Blessing of Increase and Multiply, before their

Fall;

Gen. v. 2.
and ii. 23,
24. with
iii. v. 20.

Fall; and carefully consider the Texts quoted in Gen. ii. 25. the Margin, and that Part of the ancient Tradition in *Plato* which is quoted under the 23^d *Phænomena* foregoing, we shall perhaps believe 'tis no improbable Conjecture.

XXVI. The other Terrestrial Animals were in a State of greater Capacities and Operations; nearer approaching to Reason and Discourse; and Partakers of higher Degrees of Perfection and Happiness, than they have been ever since.

XXVI. Since the *Primitive* State of external Nature was so exceeding different from the present, as has been already prov'd; the other Terrestrial Animals, as well as Man, ought to be suppos'd of a somewhat proportionably different Temper, Abilities and Actions. Besides, the Divine Providence is concern'd to suit one Being to another; and to accommodate still the Subordinate, to the *Superior* Rank of Creatures in the World: On which Account 'tis not strange, that the Brute Animals were in their Primitive Constitution very much distinguish'd from, and advanc'd above such as are now upon the Earth; the Diversity with relation to Mankind, to whom in each Period they were to be subservient, being so very remarkable. For since Mankind upon the Fall degenerated into a sensual and brutish Way of Living, the brute Creatures themselves would very unwillingly have paid their due Homage and Submission, had not they in some degree degenerated from their Primitive Dignity at the same Time. Which Degeneracy being suppos'd, a former greater degree of Abilities, Operations, and Happiness is at the same Time suppos'd also. And to strengthen this Conjecture, I may venture to appeal to *Anatomy*, whether the present Bodies of Brutes do not appear capable, as far as can be discover'd,

discover'd, of nobler Operations, than we ever now observe from them. The Advantage even of *Mankind* in this respect seeming not very considerable over the *Brutes that perish*.

XXVII. The Temper of the Air, where our first Parents liv'd, was warmer, and the Heat greater before the Fall than since.

XXVII. This has been already accounted for in the Twenty third Proposition before.

XXVIII. Those Regions of the Earth where our first Parents were plac'd, were productive of better and more useful Vegetables, with less Labour and Tillage than they have been since.

XXVIII. That we may account for this Proposition, and that Curse which was inflicted on the Ground at the Fall, in good Measure included therein; we must observe, that the Growth of Plants and Vegetables depends on a degree of Heat proportionate to the peculiar Temper and Exigence of each *Species*; and by Consequence that, let the Number of Seeds in any Soil be never so many, or their Kinds never so diverse, yet the Surface of the Earth must remain bare and barren, until the peculiar Heat of the Season and Climate be adapted to them: Now seeing different Kinds of Seeds require different degrees of Heat, 'tis only such certain Kinds of the same that will at once shew themselves, or spring out of the Earth; the rest, to which the Heat is not adjusted, lying all the while as Dormant and Dead, as if they did not really exist in Nature. Thus we have several distinct Crops of Vegetables in the several Seasons of the Year. Those Seeds which the small Heat of *February* and *March* is not able to raise, lie still in the Earth, till the greater Force of the
Sun

Sun in *April* and *May* excite them. In like manner several others, which are too crass and unpliant for the moderate Warmth of the Spring, are by the yet greater Intenfeness of the Heat in *June*, *July* and *August*, rais'd from their Seats, and oblig'd to shoot forth and display themselves. Nay, when in the Months of *September* and *October* the Sun's Power is diminish'd, and its Heat but about equivalent to that of *March* and *April*, it again suits the Plants which were then in Season; so that they many of them spring up afresh in *these* Months, and flourish over anew, as before they did in *those*; as Dr. *Woodward* very well discourfes upon this Essay, p. 267, &c. Occasion. In like manner we may also consider this matter with relation to the different Climates and Zones of the Earth, and their quite different Crops of Plants, according to those different degrees of Heat made use of in their Vegetation. When therefore we observe in the same Country a various Crop and Order of Vegetables every Year, according to the various Power of Heat in each Season; (a different Face of the Earth being gradually visible from *February* till *July*, in Proportion to the gradual Increase of Heat all that Space;) we cannot tell, in case the Heat increas'd still to a greater Intenfeness afterward, but a new and unseen Face of Things might still appear; and many unheard-of Kinds of Vegetables might put forth, and expose themselves to our Observation, even in the present State and Age of the World. But as to the Primitive World, wherein all the Seeds of those Vegetables which God originally Created were fresh and vegetous, and wherein there was a greater Heat than since has been to invigorate and produce them; 'tis very reasonable, and very agree-

agreeable to Nature to suppose, that many sorts of Trees, Plants, Herbs and Flowers, which the colder Temper of the subsequent Earth was unable to excite and produce, were then every Year rais'd, and became the principal Recreation and Sustenance of our first Parents in the State of Innocency. 'Tis very probable they might never see such a poor, jejune, and degenerate State of the Vegetable Kingdom as we since have done, till their unhappy Fall occasion'd the Introduction of that miserable Condition of all Things which has ever since continu'd among us. Thus as one Country or Climate, because of its greater Coldness, is now the Seminary of several Vegetables which the warmer Regions are either perfect Strangers to, or advanc'd to a greater degree of Perfection; so upon the Degeneracy of the Primeval State into the present, and the Abatement of the ancient Heat (taken together with the worse Juices and other Effects of that Abatement contributory perhaps to the same thing) 'tis natural to allow that several such Vegetables (suppose *Thorns* and *Thistles*) which were before either perfect Strangers to, or had been advanc'd to a greater degree of Perfection by the Juices and Warmth of Paradise, became the constant and troublesome Heirlooms there; to the no little Regret of our first Parents; who till then had only seen and enjoy'd the better Set of the *Primogenial* Vegetables. And if we consider withal, that a main Intention of the Toil, Tillage, and Manure of the Husbandman, which, now the Sabbatical Year of Rest for the Land was over, *Adam* must enter upon, seems to be design'd to enspirit and invigorate the too cold and unactive Soil with warm and active Particles, we shall not be unwilling to grant, that those Labours of the Husbandman, on
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this, as well as on several other Accounts which might be mention'd, must have been in the *Primitive* State very facile and easy, in Comparison of those which are necessary in the present State.

Scholium. 'Twill be here, I imagine, not improper to remind the Reader once for all of the Nature and Effects of that extraordinary *Change*, which the Fall of Man, and the consequent Curse of God brought upon the Earth: That he may with the greater Ease, of his own Accord, view and compare the States of external Nature before and after the Fall one with another, and with those things which the Propositions we are now upon do assert concerning them. 'Tis evident then, from what has been before laid down hereto relating, that the Primitive State of Things before the Fall was thus: The Earth, being newly form'd, was scarcely as yet entirely consolidated, and so pretty uniformly pervious to the warm Steams ascending from beneath. Its Figure was perfectly Spherical, and its *Strata* or *Layers* by Consequence were even, continu'd, and join'd; and so the Central Heat, being equally distant from all the Parts of the Earth's Surface, did very equally diffuse it self, and equally affect all the Climates of the Globe. The Soil or uppermost *Stratum* of the Earth was newly moisten'd by the Descent of the Waters, before they compos'd the Seas on the third Day of the Creation, and by the Plenty of Moisture which it still receiv'd every Night. The Air was perfectly clear, homogeneous, transparent, and susceptible of the utmost Power of the Solar Heat. The Seasons were equable, or gently and gradually distinguish'd from one another, by the Rising, Setting, Descending and Ascending Sun, without any quick Interpositions of Day

Lem. 70,
&c. and
Hypoth. 3.
prius.

Day and Night to disturb them. The *Torrid Zone* of the Earth, as I may call those Regions near the Solar Course, was very much expos'd to the Sun, and somewhat more warm'd withal by its greater Nearness to the Central Solid. The *Moon* in twelve or more Revolutions equally measured out the Year, and caus'd the most gentle, easy, and gradual Tides imaginable. This with all its natural Consequents, was the State of the *Primitive World*. But as soon as Man had sinn'd, and render'd that happy State too good for him, or indeed render'd himself wholly incapable thereof; and as soon as God Almighty had pronounced a Curse on the Ground, and its Productions, presently the Earth began a new and strange Motion, and revolv'd from *West* to *East* on its own *Axis*: A single *Νυχθήμερον*, or Revolution of Night and Day, return'd frequently, and became no longer than 24 short Hours; while the *Annual* Motion, perform'd on a different *Axis*, distinguish'd the Seasons; and in Conjunction with the *Diurnal*, describ'd the Equator, and the Tropicks; and by the Access and Recess of the Sun from the last named Circles, caus'd it to visit the several Regions enclos'd thereby. The Face of the Earth was really distinguish'd into *Zones*, by the Tropicks and Polar Circles, truly divided from one another; with respect whereto the particular Regions of the Earth chang'd their Situation; the Equator being that Circle with regard whereto they were now to be determin'd, as they had been before with regard to the Ecliptick; and so that Paradise which was before near the Middle or Ecliptick was now beyond the *Northern* Tropick or Boundary of the *Torrid Zone*. The Figure of the Earth, which was before truly Spherical, degenerated into an

Oblate

Oblate Spheroid; the *Torrid Zone* rising about 15 or 16 Miles upward, and the *Frigid* one subsiding as much downwards. The *Compages* of the Upper Earth, and of its *Strata*, became thereby chap'd, broken and divided, and so carried up the warm Steams from beneath, to particular Receptacles and *Volcano's*, which before serv'd in a more equal and uniform manner to heat and invigorate the entire Earth and its Productions. The Tides, lastly, became frequenter, and so more sudden and violent than before. Which short Summary or Scheme of the States of Nature in our Hypothesis before and after the Fall, ought to be all along born in mind, and reflected on, in order to the passing a right Judgment on the Accounts of those *Phænomena*, in the Solution whereof we are now engag'd: and which otherwise might seem very odd and unaccountable to the Reader. Which being thus dispatch'd, I proceed.

XXIX. The *Primitive* Earth was not equally *Paradisiacal* all over. The Garden of *Eden* or *Paradise* being a peculiarly fruitful and happy Soil, and particularly furnish'd with the Necessaries and Delights of an innocent and blessed Life, above the other Regions of the Earth.

XXIX. That all the *Primitive* Earth could not be equally *Paradisiacal*, and enjoy the same Privileges and Conveniences beyond the present, is easily prov'd. For seeing one of its principal Causes of Fertility, and other Prerogatives, was the greater Degree of Heat at the *Paradisiacal* Regions; the Climates near the Solar Course being alone capable of such greater Heat, must be alone capable of its Effects also; and consequently, we are to confine our Enquiries for the Garden of *Eden* to the Countries not very remote from the ancient *Ecliptick*. Now that
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some peculiar Spot or Region thereabouts might beyond all the rest, be fertile, pleasant, and paradisiacal, 'tis not difficult to suppose. At the present there is a mighty Variety in Countries in the very same Hemisphere, Climate, and Parallel. The particular Prerogatives of one Region beyond another do not entirely depend on the Sun, or the Vicinage of the Central Heat: But partly on the Nature and Temper of the Soil; the Kinds of Vegetables and Fossils thereto belonging; the Number, Qualities, and Conflux of Rivers; the Firmness or Looseness of the *Inferior Strata*, hindring, or freelier permitting the Ascent of the subterraneous Steams, Juices, and *Effluvia*: From the Coincidence of which, and of other such things, in a peculiar and advantageous Manner, order'd and dispos'd on Purpose by the Divine Providence at the *Mosaick* Creation, the extraordinary Pleasantness and Felicity of this earthly Paradise, or Garden of Pleasure, is, I suppose to be deduc'd; and which being considered, will, I believe, be sufficient to give Satisfaction in the Proposition before us.

XXX. The ancient Paradise or Garden of *Eden*, the Seat of our first Parents in the State of Innocence, was about the *North-West* Bounds of *Assyria*, at the River *Tigris* and *Euphrates*; (for their *Antediluvian* Streams seem to have been united before they were come so far as *Assyria*;) a little below which Place they were parted into four Branches, and so ran into the great *Southern* Ocean, call'd by the Ancients the *Red Sea*, at four Outlets, at no small Distance from one another.

Hypoth. 4. prius. XXX. This Situation of Paradise has been already consider'd, and need not here be reasum'd. Only we may observe, that no Scruples would ever have been rais'd about this Matter, in case the fore-mention'd Rivers had still been visible, their Course still agreeable to the *Mosaick*

Mosaick Description, and the Metals and Minerals mention'd of the adjoining Countries had been as evidently there to be found in *ours*, as they appear to have been in those *Primitive* Times. Seeing therefore the present *Theory* will so clearly assign the Cause of such Diversity, that every *Reader* will be oblig'd to grant it much harder to have accounted for the *Phænomena* of *Paradise*, consistently with the other *Phænomena* of *Nature*, if all things were now as they were at first, than almost any other of the *Antediluvian* World: I may justly hope, that this so disputed a Question of the Situation of the Garden of *Eden*, or *Primitive Paradise*, to those who embrace the other Parts of the *Theory*, will remain no longer so, but be almost as fix'd and undoubted, as any other Country or Region with the same Exactness determin'd by Geography.

XXXI. The Earth in its *Primitive* State had only an *Annual* Motion about the Sun; but since, it has a *Diurnal* Motion upon its own *Axis* also: Whereby a vast Difference arises in the several States of the World.

XXXI. This has been at large explain'd and prov'd already. Lem. 73.
& Hypoth.
3. prius.

XXXII. Upon the first commencing of this *Diurnal* Rotation after the Fall, its *Axis* was oblique to the Plane of the *Ecliptick* as it still is: Or in other Words, the present Vicissitudes of Seasons, *Spring*, *Summer*, *Autumn* and *Winter*, arising from the Sun's Access to, and Recess from the *Tropicks* have ever been since the Fall of *Man*.

XXXII. This has in some measure been insisted on already in the Hypothesis last mention'd, and needs no other direct and positive Proof than the present Obliquity of the Earth's *Axis*: It being evident, that without a miraculous Power, the same Situation or Inclination which it had

Newt.
P. 187.

originally, would and must invariably remain for all succeeding Ages.

XXXIII. Since the Commencing of this diurnal Rotation, the inward and central Parts have not revolv'd quite so fast as the outward and superficial.

XXXIV. As a Consequence of the former it appears, that the Cause of the diurnal Rotation was some Force impressed on the outward and superficial Parts, and thence communicated to the inward.

XXXIII, XXXIV. The Solution of these two *Phænomena*, as well as the *Phænomena* themselves, has been explain'd in the III^d Hypothesis already, and need not here be repeated.

CHAP. III.

A Solution of the Phænomena relating to the Antediluvian State of the Earth.

XXXV. The Inhabitants of the Earth were before the Flood vastly more numerous than the present Earth either actually does, or perhaps is capable to maintain and supply.

XXXV. **T**HIS Proposition will not appear strange, if we consider, (1.) The much greater Fertility of the *Antediluvian* Earth, to be presently accounted for; whereby it was capable of maintaining a much greater Number of Inhabitants than the present, even on the same Space of Ground. (2.) The Earth was more equally habitable all over before, than since the
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the Deluge. For before the Acquisition of those heterogeneous Mixtures, which the Deluge occasion'd, and which I take to be the Causes of all our violent and pernicious Heat and Cold in the *Torrid* and *Frigid Zones* of our Earth; 'tis probable the Earth was pretty equally habitable all over, by reason of the somewhat greater Vicinage of the Central Heat to the *Polar Regions*, and the more direct Exposing of the middle Regions to that of the *Sun*. I do not mean that the *Frigid Zones* were equally hot with the *Torrid*; but that the Heat in the one, and the Cold in the other, were more kindly; and the Excesses of each much less considerable than at present, since the Introduction of the before-mention'd Mixtures, and particularly of such sulphureous and nitrous *Effluvia*, as are now, I believe, become calorifick and frigorifick Particles in our Air, the main Occasions of the Violence and pernicious Qualities of the Heat and Cold thereof, and the most affecting to our Senses of all other. So that 'tis probable, before the Acquisition of these *Adventitious* Masses, the Antediluvian Air was every where sufficiently temperate to permit the comfortable Habitation of Mankind on all Parts of the Globe; and the Antediluvian Earth was by Consequence capable of many more Inhabitants than the present is, or can be; as every one will readily grant, who considers how few Inhabitants, in comparison, three of the five Zones of our present Earth do maintain. (3.) The dry Land or habitable Earth it self was, by reason of the Absence of the entire Ocean, almost as large and capacious again as the present: For the Ocean, I think, takes up now at the least one half of the entire Globe; but then afforded as large, spacious, and habitable Coun-

tries, as the other Parts of the Earth. (4.) The Mountains which are now generally bare and barren, were before the Deluge, so far as they were supply'd with Water, as fruitful as the Plains or Vallies; and by reason of a larger Surface, were capable of maintaining rather more Animals than the Plains on which they stand, would otherwise have been: The present Defect of a fruitful Soil being owing to the Deluge; and there being no good reason, that I know of, to be assign'd why, on a primary Formation, and in a calm and still State of the Air, the higher Parts of the Earth should not be cover'd with a fruitful Soil or Mold, as well as the level or lower adjoining to them. All which Accounts taken together, will, I think, give some reasonable Account of such vast Numbers of Inhabitants, as according to the Computation of this Proposition, the Antediluvian World was replenish'd withal.

Corollary 1. *Since by very reasonable Computations of the Numbers of the Inhabitants of the Earth at the Deluge, according to the Hebrew or Samaritan Chronology, they appear to have been sufficient abundantly to replenish the entire Globe, and full as many as in reason the same could sustain; The Septuagints Addition of six or seven hundred Years in this Period of the World to the other Accounts, is so far from clearing Difficulties thereto relating, that it greatly increases the same, and implies rather the Allowance of more Inhabitants at the Deluge, than we can at all tell where they could live and be maintain'd.*

Coroll. 2. *Since according to the old Hebrew or Samaritan Chronology from the Deluge till the Time of Abraham's going into Canaan, was the entire Space of 966 $\frac{1}{2}$ Years, and the Lives of Men during*

during that Interval were in a mean three hundred Years long; 'tis easy on the Grounds proceeded upon in this Phænomenon's Calculations to prove, That there is no need to recede from that Account, to produce the greatest Numbers of Men which in that, or the immediately succeeding Ages, any authentick Histories of those ancient Times do require us to suppose, and which I have conjectur'd at in a Table belonging to this Matter elsewhere.

See Chronol. Old Test. p. 65. &c.

Coroll. 3. The Deluge which destroy'd the whole Race of Mankind (those only in the Ark excepted) could not possibly be confin'd to one or more certain Regions of the Earth, but was, without question, truly Universal.

Coroll. 4. Seeing it appears, That Mankind has had a gradual Increase, and that in less than Five Thousand Years, our Continent of Europe, Asia, and Africa, has been so entirely peopled from the Sons of Noah; and seeing withal America is much less in Extent, and, I suppose, generally speaking, was never so full of People: In case we suppose that Famines, Wars, Pestilences, and all such sad Destroyers of Mankind have equally afflicted the several Continents of the Earth; some Light might be afforded to the Peopling of America, and about what Age since the Deluge, the Americans pass'd first from this Continent thither, if they do so pass; which a more nice Enquiry into the Particulars here to be consider'd might assist us in.

XXXVI. The Brute Animals, whether belonging to the Water or Land, were proportionably at least, more in Number before the Flood than they are since.

XXXVI. That Part of this Proposition which concerns the dry Land Animals, is sufficiently accounted for, by what has been discours'd under the last Head, which equally belongs to them as

to Mankind: And if we extend the other Part concerning the Fishes, to the Seas then in Being, and their comparative Plenitude, there will need no additional Solution. It being not to be suppos'd that the absolute Numbers of Fish before the Deluge, should be greater than at present, as the case was of the dry Land Animals; because the latter being universally destroy'd, (those in the Ark alone excepted,) were to begin their Propagation anew; but the former not being so, did but increase their still numerous Individuals, and must thereby soon recover and surpass their former Multitude; as will easily be allow'd on a little Consideration of this Matter.

Corollary. Hence arises a strong Confirmation of what is on other Grounds already asserted, That there were only smaller Lakes and Seas, but no great Ocean before the Deluge. For since it appears by this Phænomenon, that the Waters of the Antediluvian Earth were much more replenish'd, nay, crowded with Fish than now they are; and since there was no general Destruction of them, as there was of the dry-Land Animals at the Deluge; had there been as great a Compass, or as vast an Ocean for their Reception then, as at present there is, the Numbers now in every part of the Ocean or Seas, ought to be vastly greater than they then were, as being all the Off-spring of those which every where surviv'd the Deluge, and which have propagated themselves for much more than four thousand Years since the same; which being disagreeable to the Observations referr'd to in this Phænomenon, is little less than a Demonstration of the Falshood of that Hypothesis on which 'tis built, or a full Attestation to our Assertion, that there were only smaller Lakes and Seas, but no great Ocean before the Deluge.

XXXVII. The Antediluvian Earth was much more fruitful than the present; and the Multitude of its vegetable Productions much greater.

XXXVII. Before I come directly to solve this and the following Propositions, I must premise, that 'tis usually unreasonable to ask, why such *Phænomena* belong'd to the Antediluvian World: They being commonly but the natural and regular Properties of an Original Earth, newly form'd out of a *Chaos*; such as one should rationally expect in a World newly come out of the Hands of its Creator, and fitted for the Convenience and Fruition of noble Creatures; such as the Generality of our Fellow Planets, (especially our next Neighbour, the Moon) as far as we can observe, appear to have had at first, and hitherto retain'd. All that can in Reason be desir'd, is this, To give a plain and intelligible Account of those opposite *Phænomena* of the Earth, which we *now* are sensible of, and by what means the Deluge could occasion the same. Which therefore shall be frequently the Business of the succeeding Solutions. And as to the present case, the Decrease of the Fertility of the Earth at the Deluge, these Causes are assignable: (1.) The Decrease of the Sun's Heat by the greater Distance of the Earth from him since, than before the Deluge. It has been before prov'd, that till the Deluge, the Earth's Orbit was Circular, and the *Radius* of that Circle in a manner the same with the nearest Distance at the *Perihelion* now: So that since the Heat of the Sun is as the Density of his Rays, or at least *reciprocally* as the Squares of the Earth's Distance from him: If instead of the present *Ellipsis* we take for Calculations Sake, as we ought, a Circle in the middle between the nearest and farthest Distance,

we shall find that the *Sun's* Heat on the Earth in general before the Deluge, was to its present Heat, as almost a hundred to ninety six, or a twenty fifth part of his entire Heat greater before than since the same, which is by no means inconsiderable in the Case before us. (2.) The Heat of the Central Body was considerably damp'd and obstructed, both by the Waters of the Deluge themselves, acquir'd from abroad, and now contain'd in the Pores and Caverns of the Earth under us; and by that Sediment of them which now composes that upper Crust of Earth we dwell upon, and which being settled and consolidated on the Superficies of the ancient Earth, would prove a great Hindrance to the ascending Steams, not to be overcome but by Degrees, and in length of Time afterwards. From both which Causes a very notable Damp would be put to the Influence of the Central Heat, on which, as well as on the *Sun's*, the Fertility of every Soil seems in part to depend. (3.) The upper Earth, or fruitful Soil it self, the main Fund and Promptuary of the vegetable Kingdom, is now very inconsiderable in Quantity, if compar'd with that of the Primitive or Antediluvian Earth. For since this last mention'd was the entire Product of the ancient *Chaos*, at the original Formation of the Earth; and the first, what only was afforded from a small Part of such a *Chaos*, or of the Comet's *Atmosphere*, and by the Storms born off the Tops of Mountains at and after the Deluge, while the old Soil lies buried under the Sediment or Crust on which we live; 'tis no Wonder that our fertile *Stratum* is now thinner spread, and so the Productions less copious in the present, than they were in the Antediluvian State of Things. And this, tho' we

suppose

suppose the Soil from the Comet, or from the Tops of the Mountains, to be as good in it self, and to have remain'd as pure and unmix'd with any heterogeneous Matter in this Confusion of Things at the Deluge, as it would at the regular Formation of the Earth at first; which yet is by no means supposable; and the contrary to which being allow'd for, will still farther afford us a Reason of the present Assertion. So that since the present Soil is both much worse in Quality, and much less in Quantity than the old one; and since the Heat, whether of the Sun or Central Solid is so much lessen'd at the Deluge, which Things include the main Causes of Fertility; 'tis no Wonder that the present Earth is nothing near so fruitful and luxuriant in her Productions, as the Antediluvian was.

XXXVIII. The Temperature of the *Antediluvian* Air was more equable as to its different Climates, and its different Seasons; without such excessive and sudden Heat and Cold; without the scorching of a *Torrid Zone*, and of burning Summers; or the freezing of the *Frigid Zones*, and of piercing Winters; and without such sudden and violent Changes in the Climates or Seasons from one Extreme to another, as the present Air, to our Sorrow, is subject to.

XXXVIII. Seeing the primary State here mention'd, is but a proper Result from the first Formation of the Earth; all that need be accounted for, is the Alteration at the Deluge. (1.) The mighty Difference of Climates, especially of the *Torrid* and *Frigid Zones*, is, I suppose, owing not only to the *Sun's* Heat, or the Nature of the Air it self, but partly to those calorifick and frigorifick Mixtures, which are uncertainly contain'd therein. Meer Heat and Cold are very different Things from that pothery and sultry, that frosty and congealing Weather, which alternately

See also
Philos.
Transact.
N^o. 203.
p. 879,
880.

ternately in Summer and Winter, at the Line and the Poles we usually now feel. These Effects seem plainly deriv'd from nitrous or sulphureous, or other the like Steams exhaled into, mix'd with, and sustained by that thick and gross Atmosphere which now encompasses the Earth. All which I mean, as well the gross Atmosphere it self, as those its heterogeneous Mixtures, are a very natural Off-spring of the Deluge, according to the present Account thereof. For seeing we at that Time pass'd clear through the *Chaotick Atmosphere* of a Comet, we must needs bear off, and acquire vast Quantities of such heterogeneous and indigested Masses, as our Air now contains in it; whence those Effects here mention'd would naturally proceed. 'Tis probable the original Air was too pure, rare, and thin, to sustain any gross and earthy Particles, tho' they had been left in it at the first, and so its Heat both for kind and degree, was no other than the proper Place and Influence of the Sun could require: And 'twas then sure more uniform through the several Climates of the Earth than *now* it is; when our Air in the *Torrid Zone*, being full of sulphureous and sultry, and in the *Frigid* ones of nitrous and freezing *Effluvia* or Exhalations, the Violence of an unkindly Heat in the one, and of the like unkindly Cold in the other, are so sensible, and so pernicious, as all Experience attests them now to be. (2.) The Uncertainty of our Seasons, with the sudden and unexpected Changes in the Temper of our Air, are on the same Accounts equally visible with the former. For the Temper of the Air since the Deluge, especially with regard to our Sensations, not resulting from the external Heat only, but from the Kinds and Quantities of its heterogeneous
and

and adventitious Mixtures, will not now depend on the Season of the Year alone, but on the veering of the Wind, and its uncertain Removal of the Air with its Steams from one Region to another. Thus if in *Summer* the *North* Wind chance to blow any long Time together, 'twill bring along with the Air so great Quantities of the cold, freezing, nitrous Steams, as may quite overcome the *Sun's* Heat, and cause a very cold Season of a sudden; if the *South* Wind do the like in the *Winter*, the contrary Effect will follow, and we shall have a warm Season when Frost and Snow were more naturally to be expected. Thus, accordingly, frequent Experience shews the *Sun* to be so little Master of the Seasons of the Year, that sometimes *January* and *July* for several Days are hardly distinguishable. It sometimes happens, that we have this Day a Frost, the next proves so warm, that the former Cold is forgotten, till perhaps the succeeding Night puts us more affectingly in Mind of it again. Nay, in a very few Hours space a sultry and a freezing Air not seldom do succeed each other, to the great Harm and Misery of Mankind, and of all their Fellow Animals in our present State; from which certainly we have good reason to believe our happier Progenitors before the Deluge were entirely free. (3.) That our Seasons are so extreme in their several Kinds, is easy to be hence accounted for also. For were there no sulphureous or calorifick Steams in the Air, all pothery and sultry Weather, and such sort of Heat as chiefly affects our Bodies, would be quite avoided, and the great Increase thereof after the *Summer Solstice*, which arises, 'tis probable, in part from the Air's Retention of one Day's Heat, till the next augments it again, would in good measure

measure cease among us. And the like is to be said of the Cold in *Winter*, in all the respects before mention'd. The Original of all which Effects being so easily deducible from the present Account of the Deluge, 'tis no question but the Antediluvians might to their Comfort be wholly Strangers to them. Their Climates were not of so very different Temper; their Seasons leisurely and gradual, entirely following the Solar Course; and their Summers and Winters not so mighty different; at the most in the single Proportion of the Sun's Presence or Absence, direct or oblique Situation. In this equable State the *Polar* Inhabitants might with little Danger cut the *Line*, and the *Ethiopians* visit the *Frigid Zone*. In this Condition of the World, the peculiar Air of every Country went not far from Home, to disturb that of others: A few Days never made any sensible Alteration in the Temperature of the Air; and all that entire *Spring* or *Autumn* could do, would still leave the same pretty equable; to be sure very tolerable. On all which, and several other consequential Accounts, we have but too much reason to envy the ancient Happiness of our Forefathers, and to be sensible of that fatal and destructive Catastrophe, which the Wickedness of Mankind brought upon themselves, and all their Posterity to this very Day, at the Deluge we are now speaking of.

XXIX. The Constitution of the *Antediluvian* Air was thin, pure, subtle and homogeneous; without such gross Steams, Exhalations, nitro-sulphureous, or other heterogeneous Mixtures, as occasion Coruscations, Meteors, Thunder, Lightning, with contagious and pestilential Infections, in our present Air; and have so very pernicious and fatal (tho' sometimes almost insensible) Effects in the World since the Deluge.

XXXIX. The Consideration of the foregoing *Solution* is sufficient to clear the present Phænomenon also; to which therefore the *Reader* is referr'd.

XL. The Antediluvian Air had no large, gross Masses of Vapours, or Clouds, hanging for long Seasons in the same. It had no great round Drops of Rain, descending in Multitudes together, which we call Showers: But the Ground was watered by gentle Mists or Vapours ascending in the Day, and descending, in great measure, again in the succeeding Night.

XL. This is also easily understood from what has been already said. So rare, thin, pure, and subtile an Air as the Antediluvian was, would scarce sustain such gross and heavy Masses, as the Clouds are: It would not precipitate the *Superior* Vapours upon the *Inferior* in such Quantities, and with such Violence, as is necessary to the Production of great round sensible Drops of Rain: It had no gross Steams to retain Heat after the Cause of it was gone, and the Sun set; and so the Vapours which were rais'd in the Day, would descend again in the Night with the greatest Regularity and Gentleness. In all which respects the different Nature, Crassitude, and irregular Composition of our present gross *Atmosphere*, acquir'd at the Deluge from the Comets, in which such opaque Masses as the Clouds, are frequently to be observ'd, must naturally admit and require those contrary Effects, which the present Proposition takes notice of, and were to be here accounted for.

XLI. The Antediluvian Air was free from violent Winds, Storms, and Agitations, with all their Effects on the Earth or Seas, which we cannot now but be sufficiently sensible of.

XLI. These *Phænomena* are such proper Consequents

sequents of a Primitive Formation, and the Original of those opposite ones ever since the Deluge so naturally thence to be deriv'd, that there is no reason to imagine them to have been before. A Comet's *Atmosphere* is a very *stormy Fluid*, wherein Masses of opaque Matter are continually hurried about, all manner of ways, in a very uncertain and violent manner. Seeing therefore we acquir'd at the Deluge so great a Quantity of the same Atmosphere, of which ours is now in part compos'd, 'tis impossible to expect any other State of things than such as this Phænomenon mentions, and was to be here accounted for.

Gen. iii. 8.
Marg.

Corollary. Hence it appears, That the Wind of the Day, of which Moses makes mention at the Fall of Man, if it was considerable, was not a constant Phænomenon of the Earth, but peculiar to that time. And this is very agreeable to the Hypothesis before laid down of the Commencement of the Diurnal Rotation at the very day here mention'd; according to which a Wind must necessarily arise at that point of Time, tho' there were none before or after, till the Deluge. On that Beginning of the Diurnal Rotation, (1.) The Equatorial Regions would be elevated; the Polar depress'd, the Orb of Earth would be chapp'd and broken, and warm Steams burst out at the Fissures thereby produc'd; all which could scarce happen without some Agitation of the Air. But, (2.) What is more certain, and more considerable, when the Terraqueous Globe began on a sudden to revolve from West to East, the Air could not presently accompany it, and so must cause a Wind from East to West; till receiving by degrees the Impression, it kept at last equal Pace therewith, and resting respectively, caused a constant Calm afterwards. Which Wind being therefore (from the Earth's

Earth's Velocity there) greatest towards the Equator and Tropicks, near the latter of which was the Place of Paradise, would be considerable enough, especially in a State otherwise still and calm, to be taken notice of by the sacred History; and be a kind of Relick or Footstep of the then Commencement of that Diurnal Rotation, which is so necessary to account for it, and has been from other Arguments already prov'd in its proper Place.

XLII. The Antediluvian Air had no Rain-Bow; as the present so frequently has.

XLII. This is easily accountable from what has been already said. For, (1.) The Descent of the Vapours necessary to it was usually, if not only in the Night, when the Absence of the Sun rendred its Appearance impossible. (2.) The descending Vapours compos'd only a gentle Mist, not sensible round Drops of Rain, as we have before seen, on which yet the Rain-Bow entirely depends; as those who understand the Nature and Generation thereof will easily confess. So that tho' the Sun were above the Horizon at the Fall of the Vapours, the Appearance of the Rain-Bow was not to be expected. (3.) Were the Vapours that fell compos'd of sensible round Drops, and fell in the Day-time, and this in sufficient Quantities, yet for want of a Wind which might drive them together on one side, and thereby clear the Air on the other, for the free Admission of the Rays of Light, a Rain-Bow were seldom or never to be suppos'd before the Deluge; all which Circumstances being now quite otherwise, give us clear Reasons for the present frequent Appearance of that beautiful and remarkable Phænomenon, tho' till the Deluge, it was a perfect Stranger to the World.

XLIII. The *Antediluvians* might only eat Vegetables; but the Use of Flesh after the Flood was freely allow'd also.

XLIII. That a State of Nature as to the Air, Earth, Fruits, and other Circumstances so very different from ours at present, should require a suitable Difference in the Food and Sustenance of Mankind, is very reasonable to believe. But besides, (1.) When the Lives of Animals were naturally so long, (as in Correspondence to Mankind is fairly to be suppos'd,) before the Deluge; 'tis not improbable that God Almighty would not permit them to be taken away on any other Occasion than that of Sacrifice or Oblation to himself. (2.) Perhaps in the tender and even Condition of the Antediluvians, the eating of Flesh would have spoil'd their Tempers, and shortned their Lives; such Food being, I suppose, fitter for our gross and shorter-liv'd State since the Flood, than that refin'd and lasting one before it. (3.) Perhaps the Antediluvian Vegetables were more juicy, nourishing, and wholesome, not only than Flesh, but than themselves have since been; which the better and more fertile Soil out of which they grew then, gives some reason to conjecture. And whether they had not then some Vegetables which we have not now, may deserve the Consideration of such as search after their Remains in the Bowels of the Earth: The same Care of the Vegetable, as of the Animal Kingdom not appearing in the sacred History relating to the Deluge. However, (4.) If we observe that even at this Day, the warm Seasons and Countries are less dispos'd to the eating of Flesh than the cold ones; and remember that the Antediluvian Air was in some degree

degree warmer than the present, we shall not be Solut. 37. prius. wholly to seek for a particular Reason of this Phænomenon.

XLIV. The Lives of the *Antediluvians* were more universally equal, and vastly longer than ours now are: Men before the Flood frequently approaching near to a thousand, which almost none now do to a hundred Years of Age.

XLIV. Tho' several other things might here deserve to be consider'd, yet I shall only insist upon the Difference between the Antediluvian Air, and that since the Flood, to give an Account of this Proposition. The Consideration of the pure, unmixed, equable, and gentle Constitution of the former; compar'd with the gross, thick, heterogeneous, mutable, and violent Condition of the latter, of it self affording a sufficient Solution of this Difficulty. That Air which is drawn in every Breath; whose included Particles, 'tis probable, insinuate themselves continually into our Blood, and the other Fluids of our Bodies, and on which all Experience shews human Life and Health exceedingly to depend; being at the Deluge chang'd from a rare and thin, to a thick and gross Consistence; from an Equability or gradual and gentle Warmth and Coolness of Temperature, to Extremity of Heat and Cold; and that with the most sudden and irregular Steps from one to another: From true and pure Air, or an homogeneous elastical Fluid, to a mix'd and confused *Compositum* or Atmosphere, wherein all sorts of *Effluvia*, sulphureous, nitrous, mineral and metallick, &c. are contain'd. Which Circumstances, if there were no other, will, I imagine, give a satisfactory Account of the mighty Difference as to the point of Longevity between the

Antediluvians and those which ever since have dwelt on the Face of the Earth. We may obtain some small and partial Resemblance of it in a Person who had liv'd many Years upon the Top of a high Mountain, above the Clouds and Steams of our Earth, and whose Temperament of Body was peculiarly dispos'd for so pure, thin, and undisturb'd an *Æther* as there he enjoy'd; and afterward were confin'd to the most foggy, marshy, and stinking Part of the Hundreds in *Essex*, or of the Boggs in *Ireland*. What effect in Point of Life and Health such a Change must have on the Person before-mention'd, 'tis not difficult to imagine: And as easy, on a like comparision of the *Antediluvian Æther*, and the present *Atmosphere*, to account for the Proposition before us; and shew as well why Men dye at all uncertain Periods of Years, and have, while they live, a precarious State of Health, with frequent Sickneses; as why none reach any whit near the long Ages of those that before the Deluge continu'd in Health and Security for near a thousand Years together.

XLV. Tho' the *Antediluvian* Earth was not destitute of lesser Seas and Lakes, every where dispers'd on the Surface thereof; yet had it no Ocean, or large Receptacle of Water, separating one Continent from another, and covering so large a Portion of it as the present Earth has.

XLV. From the Original Formation of the Earth above describ'd, and its unequal Subsidence into the Abyss beneath, while in the mean Time vast Quantities of Vapours were sustain'd above, and afterwards let fall upon the Earth, its Surface would be unequal; its lowest Valleys fill'd with Water; and a truly Terraqueous Globe would arise. But these two plain Reasons may be assign'd

sign'd why any great Ocean were not to be expected at the same Time. (1.) So vast and deep a Valley as the Ocean implies, is not in reason to be deriv'd from such a regular Formation of the Earth from a *Chaos*, as we have above describ'd. No good reason being assignable, why in such a confus'd Mixture as we call a *Chaos*, the Parts should be so strangely dispos'd, that on one side, all the upper Orb for some Scores of Degrees, and some thousands of Miles together, should be denser and heavier than the rest, and by its sinking deepest into the Abyss, produce the vast Channel of the Ocean; while on the other side the same Orb, for as many Degrees and Miles, should be universally rare and light enough to be very much extant, and compose a mighty Continent, as the case is in our present Earth. Tho' the *Atmosphere* of a Comet be so truly heterogeneous, and its opaque or earthy Masses so unequally scatter'd abroad on the different sides thereof, as even, setting aside the Inequality of the Density and Specifick Gravity of the several Columns, might compose an Orb of different Thickness or Crassitude, and so cause an unequal Orb on the Face of the Abyss, like that we before suppos'd it originally to have been; yet so mighty an Inequality, as the present Division of the Earth into an Ocean and Continents, must suppose, is by no means to be allow'd in the primitive *Chaos*; nor would, I suppose, by any be asserted, if the Generation of those grand Divisions of our Globe were otherwise accountable: Which on our Principles being so easily done, as will soon appear, no Reason can plead here for their primitive Introduction. And sure those Agitations and Motions of Parts visible in some sort now in Comets Atmospheres, and to

be however granted in the Digestion of its Parts at first, must mix and jumble the Parts together to a degree sufficient to prevent so strange an Inequality, as the original Existence of the Ocean and Continents must needs imply. However, (2.) A main part of the Quantity of Water preserv'd above Ground was no other, as we have shew'd, than what the Air at once was able to sustain, during 9 or 10 Months Space; the Day-time of the second Period of the Creation: Which how insufficient it must have been to the filling of the great Ocean, is easily understood. Which things consider'd, the Absence of the Ocean, as well as the Existence of Seas, is very easily accountable in the Antediluvian World.

CHAP. IV.

A Solution of the Phænomena relating to the Universal Deluge, and its Effects upon the Earth.

XLVI. In the sixteenth or seventeenth Century from the Creation, there happen'd a most extraordinary and prodigious Deluge of Waters upon the Earth.

XLVI. **W**Hatever Difficulties may hitherto have rendered this most noted *Catastrophe* of the Old World, that it was *destroyed by Waters*, very hard, if not wholly inexplicable without an Omnipotent Power, and miraculous Interposition: Since the Theory of Comets, with their Atmospheres and Tails is dissolved, &c. &c. &c. they must vanish of their own Accord.

For

For if we consider that a Comet appears to be no other than a *Chaos*; including the very same Bodies, and Parts, of which our own Earth is compos'd; that the outward Regions of its *Atmosphere* are plain Vapours, or such a sort of Mists as we frequently see with us; and the *Tail* a Column of the same Vapours, rarified and expanded to a vastly greater degree, as the Vapours which in the clearest Days or Nights our Air contains at present, are; and that withal such a Comet is capable of passing so close by the Body of the Earth as to involve it in its *Atmosphere* and *Tail* for some Time, and leave prodigious Quantities of the same condensed and expanded Vapours upon its Surface; we shall easily see that a Deluge of Waters is by no means an impossible Thing; and in Particular, that such an individual Deluge as to the Time, Quantity, and Circumstances which *Moses* describes, is no more so; but fully accountable that it *might* be, nay almost demonstrable that it really *was*. All which the *Solutions* following will, I think, give an easy and mechanical Account of.

XLVII. This prodigious Deluge of Waters was in part occasion'd by a most extraordinary and violent Rain, for the Space of forty Days and as many Nights, without Intermission.

XLVII. When the Earth passed clear through the *Atmosphere* and *Tail* of the Comet, in which it would remain for about two Hours (as from the Velocity of the Earth, and the Crassitude of the said *Tail* on Calculation does appear) it must acquire a large *Cylindrical* Column of Vapours, whose Basis were somewhat larger than one of the Earth's greatest Circles, and whose Altitude were equal to the Diameter of the Comet's *Atmosphere*. Vid. Fig. 4.

mosphere. Which Vapours would be impeded from descending towards the Sun, by the Earth's Interposition and Reception of the same, and by the attractive Power of the Earth it self withal, and so would fall down with great Violence upon its Surface. A great part of which being in a very rare and expanded Condition, after their primary Fall, would be immediately mounted upward into the Air, and afterward descend in violent and outrageous Rains upon the Face of the Earth. All those Vapours which were rarer and lighter than that Air which is immediately contiguous to the Earth, must certainly ascend to such a height therein, where its Density and Specifick Gravity were correspondent (as far as that Croud of their fellow Vapours, with which the Air was oppress'd, would give leave;) and so afterwards, as they cool'd, thicken'd, and were collected together, like our present Vapours must descend in most prodigious Showers of Rain for a long Time afterwards, and very naturally occasion that forty Days and forty Nights Rain mention'd in the Proposition before us. As to the sudden Condensation of the Vapours, from the Comet upon their first Fall, whether by the Air or Earth, which has been alledg'd against the Continuance of the 40 Days Rain; be it never so evident and universal, 'tis of small Consequence, since 'tis plain their own Heat must rarify vast Quantities of them again, and occasion their Elevation into the Air again immediately. And tho' it may still farther be urg'd, that in this case the first violent Fall would it self, in an instant do the Business of the Deluge, without any occasion for these great and longer Rains of 40 Days; yet the Answer is still easy, that though the primary violent

lent Fall of the Vapours were in less than a Day's Time, as has been shewn, yet because as many would immediately rise again as the Air could hold, here is a Fund abundantly sufficient for the most violent 40 Days Rain imaginable: And though the Vapours did originally fall in so short a Time, and with such Violence on that Hemisphere of the Earth exposed to them, as *there* to do the Business of the Deluge immediately, yet because the Regions near the Ark were not in that Hemisphere, *their* Deluge, with which we are principally concern'd, must arise from the 40 Days Rain succeeding, and from the flowing in of the Waters from those other Parts of the Earth on which they first fell.

XLVIII. This vast Quantity of Waters was not deriv'd from the Earth or Seas, as Rains constantly now are; but from some other superior and celestial Original.

XLVIII. This is already evident from what has been just now said: The Source of all these Rains being one of those superior or celestial Bodies which we call Comets; or more peculiarly the Atmosphere and Tail thereof.

XLIX. This vast Fall of Waters, or forty Days Rain, began on the sixth Day of the Week, or *Friday* the Twenty-eighth Day of *November*, according to the present *Hebrew* Chronology; or on *Monday December* the 2^d, according to the exacter Chronology: Being the Seventeenth Day of the Second Month from the *Autumnal Equinox*.

XLIX. This has been already explain'd in effect, in the Hypothesis hereto relating; where it was prov'd, that a Comet on that very Day here nam'd pass'd by the Earth; and by Consequence began those Rains which for the succeeding forty Days Space continued without any Interruption.

Hypoth.
ii. prius.

L. The other main Cause of the Deluge, was the breaking up the Fountains of the great Abyſs, or the cauſing ſuch Chaps and Fiſſures in the upper Earth, as might permit the Waters contain'd in the Bowels of it, when violently preſs'd and ſqueez'd upwards, to aſcend, and ſo add to the Quantity of thoſe which the Rains produced.

Lem. 85,
86. prius.
Fig. 7.

L. This has in part been explain'd in the *Lemmata* hereto relating; and will be more fully underſtood from the Figure there alſo referr'd to. For let a d b c represent the Earth, moving along the Ecliptick G H, from G towards H. 'Tis evident that the Figure of the Earth before the Approach of the Comet, as far as 'tis here concern'd, was ſpherical. But now, let us ſuppoſe the Comet b i D h (as it was deſcending towards its *Perihelion*, along its *Trajectory* E F, from E towards F) to approach very near, and arrive at the neareſt Poſition, represented in the Figure. 'Tis evident that this Preſence of the Comet would cauſe a double Tide, as well in the Seas above, as in the Abyſs below. That in the Seas being leſs conſiderable in it ſelf, and not to our preſent Purpoſe, need not be taken any farther notice of: But the other would be vaſtly great, (ſuppoſe 5 or 6 Miles high above its former Poſition) would produce mighty Effects on the Orb above it, and ſo deſerves a nicer Conſideration in this Place. As ſoon therefore as the Comet came pretty near, (as ſuppoſe within the *Moon's* Diſtance,) this double Tide would begin to riſe, and increaſe all the Time of its Approach, till the Comet was neareſt of all, as in the Figure. And then, or rather a little after, theſe Tides, or double Protuberances of the Abyſs, would be at their utmoſt height. So that the Surface of the Abyſs, and of its incumbent Orb of Earth, would put
on

on that *Elliptick*, or rather truly and exactly oval Figure, under which 'tis here represented. Lem. 85.
 Now, 'tis certain, that this spheroid Surface of præf.
 the Abyſs is larger than its former ſpherical one ;
 'tis alſo certain, that the Orb of Earth which reſt-
 ed on this Abyſs muſt be oblig'd to follow its Fi-
 gure, and accommodate it ſelf to this large *Oval* ;
 which being impoſſible for it to do while it re-
 main'd ſolid, continu'd, and conjoin'd, it muſt
 of Neceſſity enlarge it ſelf, and by the violent
 Force of the increaſing Surface of the Abyſs be
 ſtretch'd, crack'd, broken, and have innumerable
 Fiſſures made quite through it, from the upper to
 the under Surface thereof, nearly perpendicular
 to the ſame Surfaces ; or rather the Tide muſt
 open and enlarge thoſe Fiſſures which were firſt
 produc'd at the Commencement of the diurnal
 Rotation. So that this Orb of Earth, which
 originally, in its primary Formation, was ſphe-
 rical, its inward *Compages* or *Strata* even, con-
 join'd and continual ; which had afterward, at
 the Commencing of the diurnal Rotation, been
 chang'd into an oblate Spheroid, and at the ſame
 time been thereby in a leſs degree broken, chap'd,
 and disjointed ; by that Time its Wounds had been
 well healed, and it was in ſome meaſure ſettled,
 and fix'd in ſuch a Condition, receiv'd this new
 Diſruption at the Deluge. Its old Fiſſures were
 open'd, and the Fountains of the Abyſs (moſt
 naturally and emphatically ſo ſtyl'd, according
 to Dr. Woodward's Account of the Origin of vid. Eſſay,
 Fountains) broken up ; and ſufficient Gaps made Pa. 121,
 for a Communication between the Abyſs below, &c. and
 and the Surface of the Earth above the ſame, if Pa. 152.
 any occaſion ſhould be given for the Aſcent of the
 former, or Deſcent of any thing from the latter.
 And here 'tis to be noted, that theſe Chaps and
 Fiſſures,

Fiffures, though they were never fo many or fo open, could not of themfelves raife any fubterraneous Waters, nor contribute one jot to the drowning of the Earth, if the upper Orb had been long ago fettled, and funk as far into the Abyfs as the Law of *Hydroftaticks* requir'd; and whether 'twere entire or broken, would caufe no new Prefsure; and no more than maintain its *prior* Situation on the Face of the Deep. Thefe *Fiffures* had been in a lefs Degree open and extended in their Original Generation, when the Diurnal Rotation began, and there was no remarkable Deluge, and perhaps no Deluge at all: for tho' I fuppofe the lower *Strata* of the Earth were consolidated the firft Day or Year of the Creation, and fo upon the Defcent of the Terreftrial Matter could not funk fo low as the Law of *Hydroftaticks* requir'd, and would therefore upon the original Opening of the Fiffures attempt to raife the Waters, yet the preffing of this Quantity of earthy Matter of the fecond, and of the Waters too of the third Day, might not be fufficient to raife the fubterraneous Waters high enough, fo as to caufe them to iffue out at the very Tops of thofe Fiffures. So that tho' this breaking up of the Fountains of the Deep was a prerequisite Condition, and abfolutely neceffary to the Afcent of the fubterraneous Waters, yet is it not to be efteem'd the principal Caufe or Efficient thereof: *That* is to be deriv'd from another Original, and is as follows. As foon as the Prefence of the Comet had produc'd thofe vaft Tides, or double Elevation and Depreffion of the Abyfs, and thereby disjointed the Earth, and caus'd the before-mention'd patent Holes or Breaches quite through the Body of it, the Fall of Waters began, and quickly cover'd the Earth, and croud'd the Air

with

with vast Quantities thereof: Which Waters being adventitious or additional ones, and of a prodigious Weight withal, must press downward with a mighty Force, and endeavour to sink the Orb of Earth deeper into the Abyfs, according as the entire Weight of each Column of Earth, and its incumbent Water together, agreeably to the Law of *Hydrostaticks*, did now require. And Lem. 78, 79. prius. had the Earth at its first subsiding into the Abyfs, been loose, separate, and unfix'd, so as to admit the Abyfs between its Parts, and suffer a gentle Subfidence of the Columns of the Earth entirely in the requisite Proportion, we could scarce have expected any Elevation of the subterraneous Waters. But since, as we have often observ'd, the lower *Strata* of the Earth were in good measure settled, fastened, and consolidated together before the upper were all form'd, the whole *Compages* would Archwise sustain it self much higher than the Law of Specifick Gravity would otherwise require; and so upon any Disruption of the upper Earth, its several Columns, as there was room, would settle themselves lower than they were at first, and raise any Fluid contain'd in its Fissures upwards. And withal the new and vast Pressure of the additional Waters from the Comet upon the Orb of Earth would certainly force any Fluid towards the Surface, or any Way, wheresoever there were a Passage for it: To which therefore the Breaches, Holes, and Fissures so newly generated, or rather opened afresh by the Violence of the Tides in the Abyfs beneath, would be very ready and natural Outlets; through which it would ascend with a mighty Force, and carry up before it whatever was in its way, whether fluid or solid, whether 'twere Earth or Water. And seeing, as we

Solut. 6.
prius.

we before saw, the lower Regions of the Earth were full of Water, pervading and replenishing the Pores and Interstices thereof; which Waters on the opening of the Fissures would from all Sides ouze into, and fill up the inferior Parts of the same, and rest on the Face of the Abyss; the dense Fluid of the Abyss, in its violent Ascent through the Fissures, would carry before it, and throw out at the Tops of the said Fissures great Quantities of the same; and if its Force were any where sufficient, would cast it self also out at the same Passage; and by both or either ways would add to the Quantity of the Waters already on the Face of the Earth, and become a fresh Augmentation of that Deluge, which began already to overwhelm and destroy the Inhabitants thereof. For the better Apprehension of this Matter, let us imagine the following Experiment were made. Suppose a *Cylinder* of Stone or Marble fitted so exactly to a hollow *Cylindrical* Vessel, that it may just ascend or descend freely within it: Let the *Cylinder* of Stone or Marble have small Holes bored quite through it, parallel to the *Axis* thereof: Let the Vessel be fill'd half full of Water; and the *Cylinder*, as gently as you please, be put into the Vessel, till it touch the Water: Let then each of the Holes through the *Cylinder* be fill'd in part with Oyl, or any other Fluid lighter than the Water, to swim upon the Surface thereof: Things being thus provided, you have the very case of the Deluge before you; and what Effects you here, in a lesser degree, will observe, are but the Representations of those greater and more remarkable ones of which we are now speaking. For as the Weight of the *Cylinder* pressing upon the Surface of the Water would squeeze the
Oyl

Oyl upon its Surface through the Holes, and cast it out thereat with some Violence, and cast it self too out at the same Passages, if the Holes were not too high, in comparison to the Quantity of the entire Pressure upon the Surface of the Water; just so the Weight of the Columns of Earth, augmented by the additional Waters of the Comet, would squeeze and press upon the Surface of the *Abyss*; which being a fluid Mass Newt. p. 290, &c. and incapable of sustaining a Pressure in one Part, without equally communicating it to all the rest, any way whatsoever, must burst out where-ever such Pressure was wanting, and throw it self up the *Fissures*; carrying up before it, and throwing out upon the Earth those Waters which, (like Oyl on the Water in the Experiment) lay upon its Surface, and cover'd the same; and thereby increasing the Greatness of the Deluge, and having a Share in that Destruction which it brought upon the Earth. All which, I think, gives us a clear, easy, and mechanical Account of this (hitherto inexplicable) *Secondary Cause* of the Deluge, the breaking up the Fountains of the great Deep, and thereat the elevating the subterraneous Waters, and bringing them out upon the Face of the Earth. This, I say, would be the Case, if in the first Formation of Things, the lower *Strata* of the Columns of the Earth were consolidated, and could not admit the dense Fluid, or descend farther in it, *before* the upper *Strata* were form'd; although if that Consolidation had been deferr'd till all the *Strata* were compleated, as I at first suppos'd, no after-Elevation of the subterranean Fluids or Waters contain'd in the *Fissures* could obtain, as the Learned Dr. *Keill* has well prov'd.

Corol-

Corollary 1. *These Chaps or Fissures at the Deluge would commonly be the same with those at the commencing of the Diurnal Rotation: It being easier to break the Compages of the Earth where it had once been broken already, and was never united well again, than in other Places where it was entire and continued: And those Parts which sustain'd the Force at the former Convulsion, would almost as well sustain this, of which we are now speaking, and preserve their former Continuity, still as they did before the Flood.*

Coroll. 2. *Hence if these Fissures are the Occasion and Cause of Fountains, as Dr. Woodward very probably asserts, The Antediluvian and Postdiluvian Springs must be generally the very same; as arising from the same Original; so far as the Mutations at the Earth's Surface, to be afterward explain'd, would permit and allow in the Case.*

Coroll. 3. *Since we have before shew'd, that the Mountainous Columns of the Earth are the loosest, the least compacted, and least solid of all others, the Earth would be the most subject to the Fissures and Breaches in those Parts, and the Generality of Springs and Rivers would now proceed from thence; unless the peculiar, stony, or other firm Compages of the same, prevented the Effects here mention'd, as sometimes perhaps might happen in the present Case.*

Coroll. 4. *Hence 'tis evident, that there was no great Ocean, but only smaller Lakes and Seas before the Flood. For otherwise the Tide or Flux of the Ocean would have been so great and violent, as to have superseded almost all the Designs of the ensuing Deluge, and have withal, without a Miracle, extremely endanger'd, if not certainly destroy'd, the Ark, and all those Creatures which were entring into it: Which the smaller Tides in*
the

the smaller Antediluvian Lakes and Seas would not considerably affect, or disturb.

LI. All these Fountains of the great Deep were broken up on the very first Day of the Deluge, or the very first Day when the Rains began.

LI. This is very easily understood from the Space of Time that the Comet was near the Earth. For the Duration of this Disruption, or breaking of the Orb of Earth, occasion'd by the Nearness of the Comet, must be commensurate thereto; which, tho' we should take in all the Space it was nearer than the Moon, could not possibly, as is easy to calculate, amount to nine Hours; which is indeed much more than need be allow'd; and is yet sufficiently within that Day's Space which this *Phænomenon*, if occasion were, could allow us to suppose; and so fully satisfies the same.

LII. Yet the very same Day, *Noah*, his Family, and all the Animals entred into the *Ark*.

LII. Tho' 'tis otherwise not a little strange that the Entry into the *Ark* should be deferr'd till this Day; yet 'tis clear and easy on the present *Hypothesis*. For as to the Fountains of the great Deep which were broken up this Day, thereby the Earth and its Continents were only gradually and insensibly elevated; but no other Disturbance given to *Noah* in his Entry into the *Ark* at the same Time. The *Fissures* indeed were now made, but till the Weight of the Waters from the Comet could operate, 'tis probable no Water would from thence arise to disturb him; and tho' they had, yet unless there were some of the great Fissures or Spouts just where he was, no Interruption could this Day be given him therefrom.

As

As to the Rains themselves, tho' they all fell first upon the Earth within the Compass of this Day, and so must cause a most prodigious Destruction and Confusion upon the Earth where they so fell; yet the peculiar Situation of *China* where the Ark was, lying so much *Eastward* of the Centre of this *Northern* Continent, did secure it. This Day, tho' so outrageous and destructive a one to the Inhabitants of the other Parts of the Globe, was yet here fair and calm, as at other times: Which is thus demonstrated. 'Tis evident that the *Gordyeen* Mountains are situated not very far from the Centre of our *Northern* Continent; or indeed somewhat to the *North-West* from the same; that is, as will hereafter appear, pretty near the Point b, or rather somewhat above it; which Mountains were almost directly expos'd therefore to the Comet at its nearest Distance, represented in the Figure. When the Comet therefore was moving from E to F, so soon as the Earth came within its *Atmosphere* and *Tail*, a *Cylindrical* Column of Vapours would be intercepted, and bore off by the Earth in its Passage, whose Basis were somewhat larger than a great Circle of the Earth, and whose Direction or *Axis*, from the compound Motion of the Comet, and of the Earth, were at about 35 or 40 Degrees of Inclination with the *Ecliptick*, or not very different from the Position of cd, the lesser *Axis* of the Earth; that is, the first Fall of the Vapours would only affect one *Hemisphere* of the Earth; that, namely, which were properly expos'd to their Descent; and the other would be not at all affected therewith. Now this *Hemisphere* would be represented in the Figure by a d b; and the opposite one, which entirely escap'd at the same time by a c b. So that seeing the Ark,

Solut. 69.
infra.
Fig. 7.

Ark, or *Cbina*, was much below the Point *b*; it would remain in the same during all the Time of this first violent Fall of the Waters, and have a calm and quiet Day for the Entry thereinto; while the other Regions of the Globe were subject to so violent a Storm, and such Fury of descending Vapours as no Age past or future had been, or were to be exposed to. And consequently, *Noah* had as fair and calm a Time of entering into the Ark, with all his Family, and the other Animals, as could be desir'd; when no other Parts of the Globe, but those agreeing in such a peculiar Situation with him, could have permitted the same. Which is, I think, not a meer *Satisfactory*, but a very *Surprizing* Account of the present Proposition.

Corollary 1. *Hence the time of the breaking open of the Fountains of the Deep, and of the beginning of the Rains, very nearly coincident therewith, is determin'd; and that agreeably to the Mosaick History, much nearer than to a Day; (with which Exactness we have hitherto contented our selves in the Case.) And indeed to a few Hours; for seeing all the Fountains of the great Deep were broken up on this Day; seeing the forty Days Rain began on the same Day; seeing Noah, with all his Family, and all the other Creatures, entred on this self-same Day into the Ark; all which certainly require a great part of a Day, and yet seem very incompatible; there is no other way but to assert, that tho' the breaking up of the Fountains of the Great Deep, and the Fall of the Waters, were coincident, and upon the same Day with the Entry into the Ark, as the Text most expressly asserts; yet the Place where the Ark was, escap'd the immediate Effects of the same; and while the rest of the Earth was abiding the Fury thereof, enjoy'd*

joy'd so calm, fair, and undisturb'd a Day, as permitted their regular and orderly going into the Ark, before the Waters overtook them. Which how exactly the present Hypothesis is correspondent to, I shall leave the Reader to judge from what has been said under this last Proposition; according to which 'tis plain, that the Comet pass'd by the Earth, broke up the Fountains of the Deep, and began the forty Days Rain about Noon; at which Time, tho' the Waters fell with the greatest Violence on the Earth, yet they affected the opposite Hemisphere only: And this most nicely and wonderfully corresponds to the greatest Accuracy of the present Case, and of the Mosaick History. So that now we may, agreeably both to the sacred History, and the Calculations from the present Hypothesis, assert, that the Deluge began at the Meridian of Pekin in China, about Noon. Which Exactness of Solution, wherein not only the Day, but Time of the Day assign'd from the Mosaick History, is correspondent to the present Hypothesis, how remarkable an Attestation it is to the same, and how full a Confirmation of the most accurate Verity of the Mosaick History, I need not remark; such Reflections, when Just, being very Natural with every careful Reader.

Coroll. 2. Here is an Instance of the peculiar Providence of God in the Preservation of the Ark, by ordering the Situation of it, so as to escape the Violence of the thick Vapours in their first precipitate Fall, which otherwise must very probably have dash'd it to Pieces; for considering their Velocity of Motion, which indeed was prodigious, no less than about twelve hundred Miles in the Space of a Minute, 'tis not easy to suppose, that any Building could sustain and preserve it self under the Violence thereof; which we see the Ark, by the peculiar Place of its Situation, about
sixty

sixty or seventy Degrees East from the Centre of our Northern Continent, was wonderfully secured from, while the other Regions of the Earth were expos'd thereto, and in great measure, 'tis probable, destroy'd thereby.

Coroll. 3. Hence 'tis evident, That the Place of the Ark in China, at the Beginning of the Deluge, was its true one, and not any Mountain in or near Armenia, where at last it rested. For had it been there seated, it had been expos'd to the Violence of the falling Vapours, and instead of a quiet Entry thereinto on this first Day of the Deluge, the Ark it self, with all the Creatures that were to be preserved in it, would have entirely perish'd in the very beginning thereof.

LIII. The Waters of the Deluge increas'd by degrees five Months, till their utmost Height; and then decreas'd by degrees still longer, till they were clearly gone off the Face of the Earth.

LIII. While the 40 Days Rain continued, 'tis no Wonder that the Waters increased; nor is it any great Wonder they still increased afterward for a long Time, since the other Waters, which came thro' the Fountains of the Great Deep, must then send out their Streams fastest, when the former Waters were the heaviest, or at the end of the 40 Days Rain. Nor would these Streams be stopped, till by degrees the Columns of the upper Earth were settled sufficiently into the dense Fluid, to take off their great Pressure, which might not be till a long Time after the 40 Days Rain was over. This for the gradual Increase of the Waters: As to their gradual Decrease, that will be distinctly treated of hereafter.

LIV. The Waters of the Deluge were still, calm, free from Commotions, Storms, Winds, and Tempests of

all sorts, during the whole Time in which the *Ark* was afloat upon them.

Phænomen.
41. prius.

LIV. It has already appear'd, that there were no Storms, Tempests, or other violent Commotions in the *Antediluvian* Air till the Deluge; and that during the Space here referr'd to, none would arise, 'tis but reasonable to allow. For, as to the first and principal Rain, it was, to be sure, so constant, so downright, and so uninterrupted, that no little Commotion in the Air could have Place; or if it had, could disturb it, which is commonly the case of long and settled Rains with us at this Day. And as to the subterraneous Waters, ascending with some Violence, they were confin'd to several particular Places, and not universal; and tho' they might cause some Commotions at the Bottom of the Waters, yet might the Surface of the same, and the Air, be sufficiently calm and undisturb'd.

LV. Yet during the latter part of the Deluge, there was a considerable Wind, if not Storms and Tempests also.

LV. Seeing at the end of the Flood, Storms were to be expected; and seeing yet the *Ark*, which had been afloat so long, and was so still, (the Waters being now at the very highest) was incapable of abiding a stormy Sea, as we prov'd under the former *Phænomenon*; there, at first View, appears the greatest Danger imaginable, of its perishing in the future immoderate and extraordinary Commotions. And this Danger is increased by this Reflection; that as probably it had been afloat during the most Part of the 150 Days, while the Waters were gradually and gently augmenting; so one would imagine ought it to be, for at least as many Days, during the at least

least as gentle and gradual decrease of the same afterwards: *i. e.* The Ark ought to have been at least so long afloat in the stormy, as it had been in that calm Part of the Deluge. But this Difficulty, which is to Appearance so insoluble, will soon vanish, if we consider that the Ark rested upon one of the *Gordyeen* Mountains, the *then* highest in the World. For seeing the Waters prevailed above the same Mountain 15 Cubits only, a great Part of which Depth of Water would be drawn by the Ark it self; upon the very first ceasing of the rise of the Waters from the Abyss beneath, which permitted the least Subsiding and Diminution of the Deluge, the Ark must immediately rest upon the Ground, and thereby secure it self from the impending Storms. And that accordingly it did so at the Time assign'd, on the Conclusion of the 150 Days, or the very same individual Day when the Wind began, is particularly and expressly observ'd and affirm'd by *Moses*: Which being a very remarkable Coincidence, exactly agreeable to the present *Hypothesis*, as well as to the sacred History, and of very considerable Importance, I shall set down the Words at large, as follows:

The Waters prevailed upon the Earth an hundred and fifty Days (viz. from the seventeenth of the second, to the seventeenth of the seventh Month.) And God remembred Noah, and every living thing, and all the Cattle that was with him in the Ark: And God made a Wind to pass over the Earth, and the Waters asswaged. The Fountains also of the Deep, and the Windows of Heaven were stopped, and the Rain from Heaven was restrain'd. And the Waters returned from off the Earth continually: And after the End of the hundred and fifty Days, the Waters

were abated. And the Ark rested in the seventh Month, on the seventeenth Day of the Month, upon the Mountains of Ararat.

Corollary. Hence 'tis obvious to remark the wonderful Providence of God for the Preservation of the Ark, and the sole Remains of the Old World therein contain'd, in ordering all Circumstances so, that it was afloat just all the calm Season of the Deluge, but as soon as ever any tempestuous Weather arose, was safe landed on the Top of the Gordyeen Mountains.

LVI. This Deluge of Waters was Universal in its Extent and Effect; reaching to all the Parts of the Earth, and destroying all the Land Animals on the entire Surface thereof; those only excepted which were with Noah in the Ark.

LVI. This might justly have been made a Corollary of the next Proposition, (for if the Waters in any one Region, much more a compleat Hemisphere, exceeded the Tops of the highest Mountains, it would certainly diffuse it self, and overflow the other also :) But being capable in the present Hypothesis of a separate Proof, deserves a distinct Consideration. The Waters which were deriv'd from the Comet, the principal Source of the Deluge, were more than half universal; they primarily falling upon more than one half of the Surface of the Earth. The subterranean Waters being in good measure the proper Effect of the Weight of the Waters proceeding from the Comet, would also be as universal as they at the least, if not more. And withal, if we duly consider the Velocity of the Earth's diurnal Rotation, and that the Mass of newly acquir'd Vapours was not at first Partaker of the same, but was by degrees to receive the Impression thereof, we shall with Ease apprehend,
that

that a few of the first Rotations would wind or wrap these, as well as the other Vapours, *quite round* the Earth, and thereby cause a very equal Distribution of them all in the *entire Atmosphere*, and at last render the Rains very evenly *Universal*. To which uniform Distribution the Nature of the Air it self, as at present I suppose it does, might contribute: Such an elastical Fluid as the Air scarce suffering a lasting Density or Croud of Vapours in one Region, without communicating some Part to the others adjoining; that so a kind of *Equilibrium* in the Weight, Crassitude, and Density of its several Columns may be preserv'd through the whole. So that at last, the Deluge must have been Universal, because every one of the Causes thereof appear to have been truly so.

LVII. The Waters at their utmost Height were fifteen Cubits above the highest Mountains, or about 3 Miles above the neighbouring Plains, or 6 Miles perpendicular above the common Surface of the Earth.

LVII. In order to make some Estimate of the Quantity of Water, which this Hypothesis affords us: Let us allow that the Rarity of the Tail of the Comet is so great, as indeed it is, that it will not afford us any Quantity considerable to our present Purpose; and let us suppose also that the Quantity of Water issuing out of the Fissures or Fountains of the great Deep will not afford us above one sixth Part; I mean both these in Comparison of a Deluge of 6 Miles height perpendicular, which we here seek for. And let us examine the Quantity of Vapour deriv'd from the Atmosphere of the Comet which is one main Source and Fountain of this mighty Deluge, and see how far it will go in our present Business. If we suppose our upper Crust of Earth,

and its dense Fluid taken together to be 200 or 300 Miles thick, and that it were dispers'd in a Sphere of 80,000 Miles in Diameter, as is the case of a Comet's Atmosphere, it would be then of almost as great Density as that of our Air here 7 or 8 Miles above us. Let us therefore suppose it to be so, and by consequence about 4000 times as rare as Water, and that the Earth pass'd through the same for 80,000 Miles together, as it must do because of the Comet's Centre's coming within 10,000 Miles of us. Our Earth therefore would intercept and receive on it self a *Cylindrical* Column of Vapours, whose Basis were at least equal to that of a great Circle on the Earth, and whose Altitude were 80,000 Miles. Now *Archimedes* has demonstrated that the entire Superficies of a Sphere or Globe is four times as large as the *Area* of one of its great Circles; and by consequence the Column of Vapour would be but a quarter so high when spread over the Surface of the whole Earth, or only 20,000 Miles high: And when turn'd into Water, and reduc'd thereby to the 4000 part of its ancient Space, would cover the Earth about 5 Miles deep, even tho' there were no Mountains extant above the common Surface of the Plains and Seas. So that when Allowance is made for them, as well as for the Quantities arising from the Tail of the Comet, and from the Fissures or Fountains of the Deep, the whole Quantity will cover the Earth full 6 Miles perpendicularly; which is that very height of the Waters which in this Solution was to be accounted for.

Corollary. *If the several Particulars requisite to the nice Adjustment of those Computations were more exactly enquir'd into, some Light on the present Hypothesis, might be afforded to the Density of the Atmospheres*

mospheres and Tails of Comets, which is hitherto undetermin'd; the Consideration of which Matter must be referr'd to Astronomers.

LVIII. Whatever be the height of that Gordyeen Mountain whereon the *Ark* rested now; it was at that time the highest of all others, at least in those Parts of the World.

LVIII. If we consult the Figure here referr'd Fig. 7. to, we shall easily apprehend the Reason of this, otherwise, strange Phænomenon. For seeing this Mountain was the highest in *Asia*, or in the middle Regions of our Continent; and seeing withal that entire Continent, and chiefly the middle Regions thereof, were elevated by the greatest Protuberance of the Abyss *d b c* above any other correspondent Parts of the whole Globe, the absolute or entire height of this Mountain then, would arise not only from its proper Altitude above the neighbouring Plains, but also from the Elevation of the whole Continent, or peculiarly of its middle Regions above the ancient Surface of the Plains and Seas; which is the true Reason why I suppose this Mountain to be six Miles high above the common Surface of the Earth; while it can hardly be so much as three Miles above the neighbouring Plains. So that by this Advantage of Situation, it was at the Time here concern'd, higher not only than its Neighbours, which its own Elevation was sufficient for, but than any other on the Face of the whole Earth: Some of which otherwise it could, I believe, by no means have pretended to match, much less to out-do in Altitude. Now altho' the Presence of the Comet which produc'd these Tides in the Abyss, and elevated the entire Continents above their ancient Level, did not remain after the Disruption of the Fountains of the Deep on the
first

first Day of the Deluge; yet the Effect thereof the Elevation of the Continents above their Level, would not so soon, nay, would scarce ever entirely cease. We know by common Observation, that if a Solid or Settled Mass of Bodies be torn or pull'd in Pieces, 'tis not easy to put every thing into its Place, and reduce the whole to the same fix'd Limits, it had before. If a solid compacted Mound of Earth were once shatter'd and divided, were levell'd and remov'd, tho' afterward every individual Dust of the former Earth were laid together again upon the very same Plot and Compass, yet would it not be immediately confin'd within its ancient Dimensions; its height would be at first considerably greater than before; and tho' that in length of Time would be by degrees diminish'd, by the gradual settling and crouding together of the Parts, and so some Approaches would be made thereby towards its ancient Density and lesser Elevation; yet neither would be entirely attain'd; in any moderate Space of Time at least. And this is the very Case before us. That Oval Figure which the Orb of Earth was stretch'd to at the Deluge, would remain for a considerable Time, and be many Years in settling so close together, that it might afterward remain fix'd and firm for the following Generations; before which Time 'tis evident, that the Regions near the Centre of our *Northern* or larger Continent, were the highest, and those at 90° Degrees Distance every where the lowest; and by consequence at the Time of the Ark's resting, the *Gordyeen* Mountains near the Centre of the *Northern* Continent, were elevated above the rest, and particularly above the *Pike of Teneriff*, which seems to be at present the highest of all others. And thus that *terrible*
Phæno-

Phænomenon is solv'd, which the Reverend Mr. Warren was so puzzled with, that even on the Allowance of so much Miracle as the *Creation* of the Waters of the Deluge, and the *Annihilation* of the same afterward, yet could he not account for the Letter of *Moses* without a forc'd and ungrounded Supposition, to the same Purpose with the Proposition before us: As you will find him, and not without Reason, very *emphatically* expressing himself on this Occasion.

Geolog. p. 329, 330. and Defense, p. 171, 172.

Corollary 1. *Here is a visible Instance of the Divine Providence for the Preservation of the Remains of the Old World, by ordering the building of the Ark, just Eastward of, and at a due Distance from, that which would be the highest Mountain in the World; that so upon the very first ceasing of the Rains, and the beginning of the Winds and Storms, it might immediately be safe on the Top thereof. I say Eastward of as well as at a due Distance from the Gordyeen Mountains: For the Waters that fell upon the Earth not being at first able to keep pace with its Diurnal Motion from West to East, must needs move respectively from East to West, and so carry the Ark along with them Westward. To say nothing of the Tides, whose Motion would also conspire to the same Effect with the other. And this will be the more easily believ'd, if we consider what has been already advanc'd, that Noah was the first Planter of China after the Deluge, and therefore in Probability had been the Inhabitant of those Parts before. And 'tis evident that China lies directly East from the Gordyeen Mountains, and at a due Distance from the passing from thence thereto while the Ark floated, 150 Days before it landed on those Mountains.*

Schol. post Hypoth. 8. prius.

Coroll. 2. *The same careful and wise Providence is conspicuous in the so accurately adjusting all the Circum-*

Circumstances of the Deluge, that it should be high enough to destroy the whole Stock of the dry land Animals; and yet but just so much above the Gordyeen Mountains, as permitted the Ark to rest at the very first Decrease of the Waters, and the commencing Perturbations of the Air, and the Waves necessarily ensuing, which otherwise must still have destroy'd it, notwithstanding the Advantage of its Situation before observ'd.

Coroll. 3. *Supposing the Truth of our first Postulatum, of the Verity of the Letter of the Mosaick History; as certain as is the greater height of the Pike of Teneriff, or of any other Mountain in the World, above that of the Gordyeen Mountains now; (of which I suppose there is no great question) so certain is it (bating unknown Causes, and a miraculous Power, as is always in such Cases to be suppos'd) that a Comet was the Cause of the Mosaick Deluge. For 'tis certain, by the plainest Deduction from the express Words of Scripture, that the Mountain on which the Ark rested was at that Time the highest in the World. 'Tis therefore certain, that the Continent or Basis on which the Gordyeen Mountains stand, was elevated higher at the Deluge than 'tis at present: And 'tis also certain, that no Body or Mass of Bodies in the whole World can elevate or depress a Continent of the Earth, but such as are capable of approaching the same; or in other Words, but Comets; and consequently a Comet did approach near the Earth at the same Time assigned, and was the Cause of the Deluge. Which Chain or Connexion I take to be strong, that I believe 'twill not be possible to evade its Force; and so what on other Arguments has been already establish'd, is fully confirm'd by this.*

Coroll. 4. *'Tis equally demonstrable, that the upper Orb or habitable Earth is founded on a subterraneous*

terraneous Fluid, denser and heavier than it self: This Circumstance being absolutely necessary to account for the Phænomenon we are now upon. For if the internal Regions of the Globe were firm and solid, (as is commonly suppos'd; tho' wholly gratis, and without ground:) Tho' the Comet had pass'd by, yet there could have been no Elevation of any Continent, and the Proposition before us must still have remain'd insoluble.

LIX. As the Fountains of the great Deep were broken up at the very Beginning of the Deluge, so were they stopp'd at the end of 150 Days, on the seventeenth Day of the seventh Month.

LIX. That the Fountains of the great Deep in all the Regions near the *Ark*, to which this *Phænomenon* does properly belong, would be stopp'd at this very Time is plain, because now, and not before nor after, the highest Part of the vast Tide of the Waters of the Deluge was just arriv'd thither, and so stopp'd the Exit of the Waters, till then ascending from the inward Parts of the Earth; and by opposing their Course, and immediately pressing upon and running down those *Fissures* into the Bowels of the Earth, would effectually change the Face of Affairs there: would stop the Fountains of the Deep, and make those very Outlets whence the subterraneous Waters had till then spouted forth, become the Inlets to the same Waters, and to all the rest also on the Face of the Earth; and the Means of draining them all off the same by degrees afterwards.

LX. The Abatement and Decrease of the Waters of the Deluge was first by a Wind, which dried up some: And, secondly, by their Descent thro' those *Fissures*, Chaps and Breaches, (at which part of them had before ascended) into the Bowels of the Earth, which received the rest. To which latter also the Wind, by hurrying the

the Waters up and down, and so promoting their lighting into the before-mention'd Fissures, was very much subservient.

LX. In order to the giving a satisfactory Account of this Proposition, and of the draining the Waters of the Deluge off the Surface of the Earth, (which to some has seem'd almost as difficult to solve as their first Introduction;) it must first be granted, that the Air could receive and sustain but very inconsiderable Quantities, in comparison of the entire Mass which lay upon the Earth; yet some it might, and would naturally do; which accordingly both the *Wind* here mention'd, and the *Sun* also took away, and turn'd into Vapour immediately after the ceasing of the latter Rains. But as to all the rest, there is no imaginable Place for their Reception, or whither their natural Gravity oblig'd them to retreat to, excepting the Bowels of the Earth; which must therefore be distinctly consider'd in this Place. Now we may remember, from what has been formerly said, that the Quantity of Solids, or earthy Parts in the upper Orb's primary Formation, was very much greater than that of Fluids, or watery Parts; and consequently, that the inward Regions of the Earth being generally dry and porous, were capable of receiving mighty Quantities of Waters, without any swelling, without any Alteration of the external Figure, or visible Bulk. And, indeed, if we allow, as we ought, any considerable Crassitude to this upper Orb, its *interior* Regions might easily contain a greater Quantity of Waters than what was upon the Earth at the Deluge: So that all the Difficulty is now reduc'd to this, By what Pipes, Canals, or Passages, these Waters could be convey'd into the Bowels of the Earth? Which, in

Truth,

Lem. 81.
cum Co-
roll. &
Solut. 6.
prius.

Truth, can admit of no Dispute; nothing sure being to be conceiv'd more natural *Inlets* to these Waters, than those very *perpendicular Fissures*, which were the *Outlets* to part of them before. As soon therefore as the Waters ceas'd to ascend upwards through those Breaches, they must, to be sure, descend downwards by the same; and this Descent is more natural than the *prior Ascent* could be esteem'd to be; which was a Force upon them, compelling them, against their Natures, to arise upwards, when this Retreat into the same Interstices is no other than their own proper Gravity requir'd and inclin'd them to. The Case here is in part like that of a *Sieve*, first, by Force, press'd down into a Vessel of Water, till it were fill'd therewith, and then suffer'd to emerge again; where, through the very same Holes at which the Waters ascended into, they would afterward descend out of the *Sieve* again, and retreat into their own Element, as before. All that in particular deserves here to be farther noted, is, the Interest of the Wind, or of the Agitations of the Waters, (*Goings and Returnings* in the *Hebrew* Phrase) made mention of in this Proposition. And these Commotions are, in Truth, very useful, and very necessary Assistants to the draining of the Waters from off the Earth. For when the most part of the Fissures were in the Mountains, 'twould have been a difficult Thing to clear the Valleys and lower Grounds, had there been a perfect Calm, and every Collection of Waters remain'd quietly in its own Place. But when the Waters were so violently agitated and hurried from one Place to another, they would thereby frequently light into the *Fissures*, and Breaches, and so descend as well as the rest into the Heart of the Earth; very agreeably to the
Asfer-

Affertion of this Proposition. As to the Objection against this Method of draining away the Waters of the Flood, that these *Fissures* would be fill'd at the Beginning of the Deluge, and perhaps in some Places drain away some of its Waters immediately, and so hinder the Increase of the Flood for 150 Days, which yet the sacred History mentions, I can see no Force at all in it: For let the Cracks and Fissures be full during the Deluge, nay, let the Waters be in some measure draining away continually by some of them into the Bowels of the Earth; yet till this Drain took away more than the Rains, and the running in of the Water, and perhaps other Fissures brought, the Flood would continually increase notwithstanding. And certainly the Pores, Vacancies and Interstices of 100 or 200 Miles of dry Earth, *i. e.* Earth that can still admit vast Quantities of Water (which the Thickness of the upper Crust may well amount to) are capable of receiving 5 or 6 Miles of Water into them; especially if we observe, that its inward *Strata* are not, as some imagine, almost wholly compos'd of tough Clay, common Stone, Whin Stone, Coal, Metalline Ores, and the like; but are very much made up of Turf, Sand, dry Earth, Gravel and such like, which will all receive great Quantities of Water, without any considerable Increase of their visible Bulk: For the Truth of which, I appeal to the following Table of the several *Strata* of a Well at *Amsterdam*, mention'd by no worse an Author than *Varenius*, which is the best and deepest that is readily to be met with.

Geogr. p.
46.

Feet

	Feet
Garden Mould	7
Turf	9
Soft Clay	9
Sand	8
Earth	4
Clay	10
Earth	4
Sand in which the Piles for the Amsterdam Buildings are fix'd	10
Clay	2
White Gravel	4
Dry Earth	5
Mud	1
Sand	14
Sandy Clay	3
Sand mix'd with Clay	5
Sand mix'd with Sea-shells	4
A Clayey Bottom	102
Gravel	31
In all	232

Corollary 1. Seeing the most of the Fissures were in the Mountains, and those at the first most open, and the Pressure of the incumbent Waters then greatest, the decrease and going off of the Waters would be greatest at first, while the generality of the Mountains were under Water; and less and gentler afterwards.

Coroll. 2. Several low Countries now bordering on the Seas, might, for many Years after the Deluge, be under Water, altho' by the Descent of more of the Waters into the Bowels of the Earth, they might become Dry-land afterward; and by their Smoothness and Equability, shew their once having
K k lain

lain under, and been made so plain by the Waters. Instances of which are now very observable in the World: In particular, those Parts of Cambridge-shire and Lincolnshire which border on the German Ocean, appear very evidently to have originally been in the same case, as any careful Observer will easily pronounce; and the same is more remarkably true of Holland, and other Parts of the Low-Countries.

Schol. 'Tis perhaps worth our Enquiry, whether most Mens Notions of the Time for the abating of the Waters of the Deluge be not very precarious at least, if not wholly mistaken. 'Tis the general Opinion, taken from the *Mosaick History* of the Flood, that the Waters were wholly subsided, and the Earth laid as dry in a manner as 'tis at present, by that time *Noah* came out of the Ark, or in the Space of about a Year from the beginning of the Flood. 'Tis true, *Moses* says, that on the

Gen. viii. *seventeenth Day of the seventh Month the Waters*
 3. 4. *were abated, and the Ark rested on the Mountains of*
 5. *Ararat: That on the first Day of the tenth Month*
the Tops of the Mountains were seen: That on the
 13. *first Day of the next Year the Waters were dried up*
from off the Earth. And then lastly, That on the
 14. &c. *twenty seventh Day of the second Month was the*
Earth dried, and Noah call'd out of the Ark.

But all this may be very true, and yet vast Quantities of the Waters of the Deluge might at the same time remain on the Face of the Earth. And as the present Ocean may be still a part of the same, so the rest of them might require a hundred or two hundred Years before they arriv'd at or near to their present Subsidence and Condition. And this, I think, is the Truth of the Case; and is so far from contradicting the sacred History, that it may be establish'd by an Observation or

two from thence, as well as by the present *Phænomena* of Nature. As to the sacred History of *Moses*, 'tis first evident, that the mountainous Regions about *Ararat*, or the *Gordyeen* Mountains, especially since they were, from my *Hypothesis*, particularly elevated above the rest, might be wholly clear of the Waters in a Year's Time; and yet the lower Plains and Valleys in a very different Case, and still to a great Depth under the Water: And 'tis as evident, 2dly, That we have no authentick Account of the lower Plains being become dry and habitable, even in Regions more elevated than many others, I mean about the middle Parts of our Continent, till the building of *Babel*, the Confusion of Languages, and the Dispersion of the Nations over the Earth; none of which happen'd, even according to the *Hebrew* Chronology, before the second Century from the Deluge, in the Days of *Peleg*. And then as to the present *Phænomena* of Nature, I think they determine the Question before us, and sufficiently demonstrate the longer Abode of the Waters of the Deluge upon the Earth than is commonly allow'd: For as many maritime Countries (which I have already observed, and others have noted the same) do, by their remarkably even and smooth Surface, shew they have been made so in length of Time, by the Motion of the Sea, which now lays the Sand in the same manner; so does the Consideration of the Nature and Position of the *Strata* of the Earth in some Places now fully confirm the same Observation. Near my former Habitation, at *Lowestoft* in *Suffolk*, upon the Sea-Coast, there is a pretty high and remarkable Cliff, at the least twenty Foot above the Surface of the Ocean adjoining; and yet 'tis to the very top *Stratum* of all almost as evidently the Pro-

Gen. x. 2.

& xi. 1, 2.

Corol. 2.

suprà.

Mr. Ray's

Physico-

Theolog.

Discourses

p. 28, 29.

2^d Edit.

duct of the Waters, laying Heaps, *Strata*, and Beds of *Sand* and *Chingle*; as that very Shore on which we stand, and which is daily made and removed by the Tides and Waves of the present Ocean. And as I do not doubt from the always equal Height of the Ocean every where, that 'tis frequently thus in other Places also; so this is, I think, a plain Evidence that the Ocean has been at least 20 Foot higher than 'tis now; and that for a long time together; sufficient I mean to heap up such mighty Beds of Sand and Chingle as the present Observation does require. Which of it self is at once a Demonstration that all the lower Regions near the Sea have formerly been drown'd, and lain under Water; and at the same time does fully confirm that length of Time which I assert was taken up in the entire Subsidence of the Waters at the Deluge.

LXI. The *Antediluvian* Year was in absolute Space of Time nearly equal to our present and ancient Lunar one, or above 10 Days shorter than our present Solar Year.

LXI. This has been accounted for under the XI. *Hypothesis*, with the LI. and LIX. *Lemmata* already.

LXII. Yet the *Antediluvians* had full 360 Days in their Year.

LXII. This has also been accounted for under the same XI. *Hypothesis* and *Lemmata* already.

LXIII. The dry Land, or habitable Part of the Globe, is, since the Deluge, divided into two vast *Continents*, almost opposite to one another; which, as is most probable, are separated by a great Ocean interpos'd between them.

LXIII. The Figure in which the Comet left the Earth, and which it would in some measure retain

retain ever after, was, as may be seen in our Scheme, an Oval or *Oblong Spheroid*; whose longer Axis *a b* would determine the highest extant Parts of the Earth; and whose shorter Axis *c d* by a Revolution about the Centre perpendicularly to the longer Axis, would alike determine the lowest or most depress'd Parts thereof. When therefore so much Water was run down into the Earth as the Apertures could receive; all that remain'd (excepting the ancient lesser Seas somewhat augmented every where) must be found in the lowest Vallies, or near the shorter Axis's Revolution, all round the Globe, composing a mighty Ocean; while the two elevated Regions near the two Ends of the longer Axis, were extant above the Waters, and compos'd those two opposite Continents of the Earth, made mention of in this Proposition.

Corollary 1. *'Tis probable that America is entirely separated from our Continent by the interpos'd Ocean, without any Neck of Land, by which it has been by many imagin'd to communicate with Tartary.*

Coroll. 2. *Possibly some of the American Continent were preserved from the Deluge, as well as we know some were preserv'd in this Continent; tho' we have no Records left among them to give us notice thereof. 'Tis evident that the whole Earth in Moses is no more than the then known Parts of the Earth or World; and 'tis evident that Men knew nothing then of the American World: So that the Silence of the sacred Historian relating to that World is of no Validity as to this Matter. And since the other Arguments seem to imply it was not peopled from this Continent, I think 'tis the most probable that some were saved there from the Deluge as well as here.*

LXIV. One of these *Continents* is considerably larger than the other. *Agreeably to the Proposition.*

LXIV. Since in all the Tides, and so in those Protuberances which occasion'd the present Continents, that which respects the Body producing the same, is larger than its opposite one; 'tis evident, so it ought to be here, and the Continent situate about the Point b, considerably larger than the opposite one about a, agreeably to this Proposition.

Corollary. *In this Posture of the Abyss, and its incumbent Orb, the Earth is correspondent to the Egg, its ancient Symbol and Representative, not only in its inward and entire Constitution, but in some measure in its external Figure also; the Resemblance between them becoming by this means in a manner Universal.*

LXV. This *Continent* lies most part on the North-Side of the Equator; and the smaller, as far as is yet certainly known, most part on the South.

LXV. The Position of the Continents depended mainly on the Time of the Year when the Comet pass'd by. For since the Comet descend'd in the Plain of the Ecliptick from the Regions almost opposite to the Sun, and came to its nearest Distance about 130 Degrees onward from the Point in the Ecliptick opposite to the Sun, before which, and yet scarce till after the Comet were past 90 Degrees, or the Periphery of the Ecliptick, would the Tides be great enough to burst the Orb of Earth, and fix the Centres of the Continents; by considering the Place of the Earth in the Ecliptick, and counting about 100 Degrees onward, one may determine the Latitude of the Point on the Earth directly expos'd to the Comet's Body, and by consequence of its
opposite

opposite Point also; about which Points the two Continents lay. Now the Earth being about the middle of *Taurus* to an Eye at the Sun (which I always in such Cases suppose) at the Time of the passing by of the Comet, about the middle of the second Month from the Autumnal Equinox; the latter Part of *Leo* (being 100 Degrees onward from the Point opposite to the Sun) will nearly determine the Latitude of the larger Continent *dbc*, as by consequence will the latter Part of *Aquarius* that of the smaller *dac*: On which Accounts 'tis evident, that the larger must be mostly on the *North*, and the smaller mostly on the *South* Side of the Equator.

LXVI. The Middle or Centre of the *North-Continent*, between the utmost Bounds, *North* and *South*, *East* and *West*, is about sixteen or eighteen Degrees of *Northern* Latitude; and that of the *South* about sixteen or eighteen Degrees of *Southern* Latitude.

LXVI. This Proposition (which more nicely determines that Position of the Continents which the last more generally asserted) is thus demonstrated. Each Continent must retain that Position which it had when its *Compages* was burst by the Elevation of the Abyss. Now the bursting of the Orb is to be suppos'd before the Comet's nearest Distance; and by consequence the Centres of the two Continents *a* and *b* ought to have the Latitude of the Points about 90, or rather nearer an 100 Degrees onward beyond that opposite to the Sun, or beyond the Sun it self. So that the Centre of the *Northern* Continent, near the *South-East* Point of *Arabia*; and of the *Southern*, near the Source of the vast River *De la Plata*, ought to be about the same Latitude with the 20th Degree of *Leo*, and of *Aquarius*, or near 16 Degrees, the former of *Northern*, the latter

of Southern Latitude, as this Proposition asserts them really to be.

Corollary 1. *If therefore we were to determine the Time of the Year of the Comet's passing by the Earth, or the commencing of the Deluge from the Position of the Centres of our two opposite Continents, which depend thereon; we ought to assign it near the middle of the second Month, from the Autumnal Equinox; agreeably to the Time already fix'd both from the sacred History, and the Calculations of Astronomy at the eleventh Hypothesis foregoing.*

Coroll. 2. *Hence all those Corollaries to the third and fourth Argument of the said eleventh Hypothesis are mightily confirm'd: To which I refer the Reader for their second Perusal; the Importance of their Subjects well-deserving the same at his Hands.*

LXVII. The Distance between the Continents, measuring from the larger or Northern, South-Eastward, is greater than that the contrary way, or South-Westward.

Fig. 7.

LXVII. Seeing the Motion of the Comet about its nearest Position was much more considerable than the Diurnal one of the Earth; and seeing withal the greater and higher Protuberance would arrive at a sufficient Force to burst its incumbent Orb or Continent somewhat sooner than the lesser and lower; it will follow that the Point b would not be just opposite to the Point a, but nearer the Place q in the Figure. By which means the Distance from q by c to a would be greater than from the same q by d to a; or from the Centre of the great Continent to that of the lesser South-Eastward, than South-Westward: Exactly as this Proposition requires.

LXVIII.

LXVIII. Neither of the *Continents* is terminated by a round or even circular Circumference: But mighty Creeks, Bays, and Seas running into them; and as mighty Peninsula's, Promontories, and Rocks jetting out from them, render the whole very unequal and irregular.

LXVIII. If the Surface of the Earth before the Deluge had been even and smooth, without Mountains and Vallies; and their Consequents, Seas and dry Land, the passing by of the Comet must indeed, as before, have certainly caus'd a Distinction of the two Continents, and must have interpos'd an Ocean between them; but then these two Circumstances would have obtain'd also, first, that all the Waters of the entire Globe would have left the Continents, and solely compos'd an Ocean; and secondly, That the Termination or Boundaries of the Ocean and the Continents would have been circular, round, and even on every Side. But since the Surface of the Earth was uneven; irregular, and distinguish'd every where into Mountains, Plains and Vallies, into Seas and dry Land, the present Terraqueous Globe, with those Inequalities of the Termination of each Continent mention'd in this Proposition, is a most easy and natural, nay a plainly necessary Result of this great Mutation at the Deluge.

Corollary 1. Hence 'tis farther evident, that the Surface of the Antediluvian Earth was not plain and even, but had those Distinctions of Mountains and Valleys, Seas and dry Land, which from other Arguments had been before establish'd.

Coroll. 2. Hence therefore it appears (what should have been before observed) that all the Earth might be planted and peopled before the Deluge, even tho' the Navigation were then either not at all, or not considerably known: There being no Ocean or
separate

separate Continents; and scarce any such thing as an Island or Countrey but what with Ease might be gone to by Land.

LXIX. The depth of that Ocean which separates these two *Continents* is usually greatest farthest from, and least nearest to either of the same *Continents*; there being a gradual Descent from the *Continents* to the middle of the Ocean; which is the deepest of all.

LXIX. The reason of the gradual Declivity towards the middle of the Ocean, is very plain from the Figure hereto belonging. For since the Earth's Surface became in some degree an Oval, or oblong Spheroid, 'tis necessary that there should be (as far as the other Irregularities of the Globe would permit) a Descent from the Ends of the longer *Axis* *b* and *a*, to those of the shorter *c* and *d* in their entire Circumvolution; which gives a most obvious Account of the present Phenomenon.

LXX. The greatest Part of the Islands of the Globe are situate at small Distances from the Edges of the great *Continents*; very few appearing near the middle of the main Ocean.

LXX. Since Islands are only such high Regions as would be extant above the Surface of the Waters, tho' they cover'd the neighbouring Parts; and since the Ocean, as we have now shewn, was deepest in the middle between the two *Continents*; 'tis plain that, *cæteris paribus*, the higher Regions would more frequently be extant near the *Continents*, than about the middle of the said Ocean; as this Proposition asserts.

LXXI. The Ages of Men decreas'd about one half presently after the Deluge; and in the succeeding 1300 Years were gradually reduced to that Standard at which they have stood ever since.

LXXI.

LXXI. The first part of this is already sufficiently accounted for in that Proposition, where the Causes of the Change in the Duration of Men's Lives at the Flood were in general enquir'd into. But the reasons of the gradual Decay in the succeeding Ages are here to be assign'd. Now here 'tis not impossible that the considerably long lives of the first Postdiluvian Patriarchs might in part depend on the vigorous Constitution of their Fathers, not to be immediately impair'd to the utmost, or destroy'd in their Posterity, till by Degrees, and in length of Time it was effected. But besides, 'tis to be consider'd, which I take to be the principal Thing, that seeing the corrupted Atmosphere, with the pernicious Steams arising from the newly acquir'd Chaotick Crust, or Sediment of the Waters, and their unhappy Effects on the Fruits, as well as living Creatures upon the Earth, must be allow'd the Occasion and Cause of the shortning of human Life; such Regions as were freest from, or most elevated above the said Sediment, or Chaotick Atmosphere, must have chiefly continu'd as they were before, and so the ancient Longevity would chiefly be preserv'd therein. Which being suppos'd, and what has been already advanc'd withal consider'd, this Proposition will be easy, plain, and natural; and a peculiar Attestation to the present Hypothesis. For seeing *Noah* and the Ark were landed on the most elevated Region of the Earth, and freest from the Sediment of the Waters, as well as the Grossness of the Chaotick Atmosphere below, that Place would scarce differ for a good while from the Antediluvian State of Things, and the Lives of Animals would retain very near their ancient Duration; which accordingly we find was really done. *Noah* survived the Deluge

Solut. 44.
prius.

no less than 350 Years, and compleated 950 in the whole (somewhat beyond the moderate Proportion of the Antediluvians themselves; as the Table belonging to this Phænomenon will easily shew.) But then by reason both of the Descent of his Posterity into the Plains, and lower Grounds, and principally by the gradual Subsidence of those Regions themselves into the gross Atmosphere below, they became gradually liable to those Diseases, and that Shortness of Life, which we before shew'd to have been the sad Effects thereof, and to which all Mankind has since been subject.

Gen. xi. 2.

Graunt, p. 59, 85, 86. Corollary 1. *Mankind increased vastly more soon after the Deluge than in these latter Ages of the World. For whereas a Country is near 400 Years now in doubling its Inhabitants, had the same rate held ever since the Deluge, Mankind at this Day would not have reach'd the Number of many thousand Souls; which yet is esteem'd to be many hundred, if not some thousand Millions. So that 'tis evident, That the Antediluvian Fruitfulness, and numerous Stock of Inhabitants, (which are also themselves hereby fully establish'd,) must have prevail'd, servata proportione, among the primitive Postdiluvians for some Centuries, or else no Account were to be given of the present Numbers of Men upon the Face of the Earth; whereby the Verity of this Proposition, the Veracity of Moses therein, and the great Importance thereof, are mightily confirm'd.*

Job xlii.
16.

Coroll. 2. *Hence by the Table of the Decrease of Men's Lives after the Deluge before-mention'd, we may nearly determine the Ages of Men for the first 1300 Years after the Deluge, from the length of their Lives given. Thus Job, who appears to have liv'd at the least about 180 Years, must have been contemporary with some of the Patriarchs between Serug and*

and Jacob, to whom that Duration of human Life belong'd; and thus we may examine and very probably determine the Ages of the most ancient Kings mention'd in prophane Histories, from the like Duration of their Lives or Reigns.

Coroll. 3. Hence the Chinese Antiquities appear worthy of Regard, because the length of their first Kings Reigns imply them to be very ancient, and to begin, if not before, yet at, or soon after the Deluge, as we have elsewhere observ'd. And if the Egypt-^{Chron.} tian and Assyrian Dynasties did more plainly agree ^{Old Test.} with this ancient Longevity, they would be more un-^{P. 64, 65.} exceptionable than now they are.

Coroll. 4. The Antediluvian and Postdiluvian Years mention'd in Scripture were true Years of Twelve, not fictitious ones of one Month apiece; as some, that they might reduce the Age of the first Patriarchs to the short Term of Life since usually attain'd to, have been willing to surmise. This Fancy is strangely absurd, and contrary to the sacred History, and in particular irreconcilable with this Proposition. For had the ancient Years been Lunar, of one Month, and the latter Solar of twelve, by which the same Duration of Human Life had been differently measur'd; the Number of Years which Men liv'd, must have alter'd in the Proportion of twelve to one of a sudden, at such a Change in the Year transferr'd to, and not gradually and gently, as 'tis here evident they did.

LXXII. Our upper Earth, for a considerable depth, even as far as we commonly penetrate into it, is *Factitious*, or newly acquir'd at the Deluge: The ancient one having been cover'd by fresh *Strata* or *Layers* of Earth at that Time, and thereby spoil'd or destroy'd as to the Use and Advantage of Mankind.

LXXII. 'Tis not to be suppos'd, that the Waters of the Deluge were merely the pure Element

ment of Water, sincere and unmixed. What came from the Comet's Atmosphere, must partake of its earthy heterogeneous Mixtures; and what was squeez'd up from beneath, must carry up much Dirt and earthy Matter along with it. Besides which, as soon as the stormy Weather began, and as the vast Tide of Waters went along from *East* to *West*, the soak'd and loosen'd Tops of Mountains would easily, by the Winds and Waves together, be wash'd off, or carried away into the Mass of Waters, and increase the Impurity and earthy Mixtures thereof. On all which Accounts, the Waters of the Deluge would be a very impure, thick, and muddy Fluid, and afford such a Quantity of earthy Matter as would bear some small Proportion to that of even the Water it self. Now this earthy Matter being heavier than the Water, would by degrees settle downwards, and compose first a mighty thick, dirty, muddy Fluid in the lower Regions of the Waters, and at last a plain earthy Sediment at the Bottom of them; which would at once spoil and bury the old Surface of the Ground, and become a new Crust or Cover on the Face thereof. Now, that we may see whether this Sediment or Crust could be so thick and considerable as this Phænomenon requires, let us suppose, as before, the perpendicular height of the Waters of the Deluge to have been some 6 Miles above the common Surface of the Plains and Seas, and the 60th part only of the entire Fluid on the Face of the Earth to have been earthy Parts fit to compose the Sediment or Crust before mention'd. Let us also remember what has been already observ'd from Sir *Isaac Newton*, That Earth is nearly Five times as dense and heavy as Water: So that the 60th Part in the Quantity of Matter, would only take

Hypoth. 2.
prius.

take up the 300th Part of the whole Space, either in the Waters, or when 'twas settled down by it self, and became a new Crust or Orb upon the Earth. If we then divide 31,680 the Number of Feet in 5 Miles, the whole height of the Waters, (not here to allow for the inconsiderable Spaces possessed by the extant Parts of the Earth) by 300, the Quotient will shew the Craffitude or Thickness of this Sediment or Crust covering the Face of the Earth, viz. about 105 Feet, one Place taken with another indifferently. Which Quantity fully accounts for the Proposition we are upon, and agrees with the Observations made in the Bowels of our present Earth, to as great Accuracy as one could desire or expect.

Corollary 1. *Hence it appears, That the Earth was generally uninhabitable for several Years after this Flood: This new factitious Sediment of the Waters requiring no little Space of Time e're it would be fully settled, its Strata consolidated, its Surface become hard and dry, and its Vegetables sprung out of it; before which Time it must have been uninhabitable by Man, and the other dry Land Animals.*

Coroll. 2. *Hence we may see the Care and Wisdom of Divine Providence for the Preservation and Maintenance of Noah, and of all the Creatures in the Ark, after their coming out of the same again; by ordering all things so, that the Ark should rest on the highest Mountain in the World, and that the Waters should so little surpass the same, that the Sediment thereof could neither spoil the Fruits of the Ground, nor render the Surface uninhabitable, as it did on the other Regions of the Earth. For since the Quantity of the Sediment would generally be proportionable every where to the perpendicular height of the Waters over the Surface of the Ground*
below;

below; though it would cover all the other Regions of the whole Earth, yet on this highest of all the Mountains, (cover'd but a few Days, or perhaps Hours, with any Waters, and they never above fifteen Cubits perpendicular height) the Quantity of the Sediment would here be perfectly inconsiderable, and the Earth would not be at all alter'd from what it was before, nor its Vegetables hurt by this universal Deluge. So that this, and this only was the Spot of Ground capable of receiving the Ark, and of sustaining the Creatures therein; till afterwards the rest of the Earth became fit for their Descent and Habitation. To this Spot therefore, by such a wonderful Adjustment of all the requisite Circumstances of the Deluge, preserv'd and distinguished from all the rest of the World, the Divine Providence did conduct the Ark; and on this was laid the Foundation of the present Race of Mankind, and of all those Terrestrial Animals which are now on the Face of the whole Earth; which otherwise had perish'd at their Exit out of the Ark, notwithstanding their wonderful Preservation therein during the Rage of the Deluge.

Coroll. 3. Hence appears a certain way of determining whether this Account of the present upper Earth, as derived from the bare Sediment of the Waters of the Deluge, be true or not. For 'tis but sinking a Well on the Top of the highest Gordyeen Mountain; and if the Strata appear to be thin and many with Garden Mould, and Sea-Shells, &c. at a great depth as 'tis in other Places, this Account must be false; but if there appear large Strata and few, without any Garden Mould, Sea-Shells or the like, this Account will appear true, and fully attested by so remarkable a Phænomenon.

Gen. viii.
11.

Coroll. 4 Hence we may easily understand whence the Olive-branch was brought by the Dove to Noah.

For

For since the Trees adjoining to the Ark, or on the neighbouring Tops of the Hills had suffer'd small Damage by the Flood, and had since the clearing of the Waters enjoy'd almost the whole Spring and half the Summer; they must be as flourishing, and full of as many new and tender Sprouts as ever; one of which might therefore be easily broken off by the Dove, and brought to Noah in her Mouth; which new, dry and firm Sprout or Branch, being a clear Evidence, that the Waters were not only gone, and the neighbouring Ground dry a great while before, but that the Earth was still as formerly, fit for the Production of its wonted Trees and Fruits, must exceedingly tend to the Satisfaction of Noah, and the Confirmation of his Faith and Hope in an entire Deliverance, and in the future Renovation of the World.

LXXIII. This factitious Crust is universal upon the Tops of the generality of Mountains, as well as in Plains and Vallies; and that in all the known Climates and Regions of the World.

LXXIII. This is necessarily consequent from the Universality of the Deluge already accounted for. And tho' the generality of the Mountains would usually have a thinner Sediment or Crust than the Plains or Vallies, in Proportion to the lesser height of the Waters over each of them respectively; yet they being at the Deluge much inferior to the height of the Gordyeen Mountains, must be generally cover'd with the same Crust, (unless the Storms and Waves wash'd it down again after its first settling upon any of them,) as the Observations shew they really now are.

Corollary 1. 'Tis hence evident, even abstractedly from the sacred History, that there has formerly been an Universal Deluge, much higher than the ge-

nerality of the Mountains. So that hereafter, since the so useful Observations of Naturalists, and principally of Dr. Woodward hereto relating, we scarcely need to endeavour to secure the Credit and Veracity of the Mosaick History of the Deluge by the ancient Records, and the universal Attestation of Antiquity; (which Testimonies yet are too evident and numerous to be denied;) but may from our own Eyes, at the neighbouring Mines and Coal-Pits, satisfy our selves of the exact Truth of this part of the sacred Volume, which has been so much excepted against by ill-disposed Persons. So wonderful is the Method of the Divine Wisdom in its seasonable Attestations afforded to the sacred Scriptures! That not only the Very Day, as we have seen, when the Flood began, assured by Moses, may still, after more than four thousand Years, be proved not only from Plutarch's express Testimony, but from Astronomy it self, to have been the true one; which the Learned are chiefly capable of judging of, and being primarily influenc'd by: But the Reality and Universality of the Deluge it self is demonstrable from such common and easy Observations, in all Parts of the World, at the neighbouring Mines or Coal-Pits, that the Vulgar and most Illiterate may be Eye-witnesses of the certain Effects of it, and so fully convinced of the Fidelity of the sacred Historian therein.

Vid. Dr.
Bentley's
Serm. 4.
P. 34, 35.

Coroll. 2. 'Tis no wonder that so few or rather none of the Antediluvian Cities, Towns, Buildings, or other Remains are any where to be met with since the Deluge: They being all generally buried, perhaps above an hundred foot deep in the Earth, by the Sediment of the Waters.

LXXIV. The Parts of the present upper Strata were, at the Time of the Waters covering the Earth, loose, separate, and divided; and so floated in the Waters among one another uncertainly,

LXXIV.

LXXIV. This Proposition needs no farther Explication; being already plain from what has been already said.

LXXV. All this heterogeneous Mass thus floating in the Waters, by degrees descended downwards, and subsided to the Bottom, pretty nearly according to the Law of Specifick Gravity; and there compos'd those several *Strata* or *Layers*, of which our present upper Earth does consist.

LXXV. This Proposition is as easy as the former; and included in what has been already said.

LXXVI. Vast Multitudes of Fishes, belonging both to the Seas and Rivers, perish'd at the Deluge; and their Shells were buried among the other Bodies or Masses which subsided down, and compos'd the *Layers* of our upper Earth.

LXXVI. Where so heterogeneous a Mass of Corpuscles were dispers'd every where through the Waters; and towards the Bottom, especially at the latter end of their Subsidence, render'd the same very thick and muddy; 'tis naturally to suppose, that Multitudes of Fishes, partly stifled with the Spissitude and Grossness of the Fluid; (scarce there deserving that Name;) and partly poison'd with the kinds of some of those Corpuscles which they took in, together with their Nourishment therein, would be destroy'd and perish in the Waters: Which being granted, the rest so easily follows, as not to need any farther Explication.

LXXVII. The same Law of Specifick Gravity which was observed in the rest of the Mass, was also observed in the Subsidence of the Shells of Fishes; they then in the main sinking together with, and accordingly being now found inclosed among those *Strata* or Bodies which are nearly of their own several Specifick Gravities: The

heavier Shells being consequently still inclosed among the heavier *Strata*, and the lighter Shells among the lighter *Strata*, in the Bowels of our present Earth.

LXXVII. This Phænomenon is so natural and necessary, considering the gradual Increase of the Thickness of the gross Sediment downward, and the equal Subjection of Shells to the Law of Specific Gravity with all other Bodies, that I shall not insist any farther upon it.

Corollary. *This single Phænomenon of the Shells of Fish inclosed in the most solid Bodies, as Stone and Marble, and that all over the World, according to their several Specific Gravities, at great depths within the Bowels of the Earth; which is so strange in it self, so surprizing to the Spectators, and so unaccountable without the most unusual and precarious Miracles be introduced, on any other Principles; and yet so easily and naturally solved in the Hypothesis before us; is a strong, I had almost said an invincible Argument for the Verity thereof; and as undeniable almost as a Physical Assertion is capable of: That is, 'tis, (as far as we can in reason pronounce) without a Miracle, certainly true.*

LXXVIII. The *Strata* of Marble, or Stone, and of all other solid Bodies, attained their Solidity, as soon as the Sand, or other Matter whereof they consist, was arrived at the Bottom, and well settled there. And all those *Strata* which are solid at this Day, have been so ever since that Time.

LXXVIII. Seeing this upper Crust or Sediment was compos'd in great part of the earthy Corpuscles or Masses of a Chaos, as well as the Primitive Earth was at the *Mosaic* Creation: The very same Reasons assignable for the Coalescence and Consolidation of the former, are equally to be suppos'd in the present Case, and
render

render it equally reasonable with the other. And if the dense Fluid, or any Parts or Steams from that, were instrumental to the original Union of Parts, at the primary Formation of the Earth, 'tis probable there was no want of it at the Deluge; the *Atmosphere* of the Comet, and the Fountains of the Deep, being both capable of supplying sufficient Quantities, among the larger Plenty of their watery and earthy Masses; as is plain from what has been already said. Neither in case some of it were acquir'd by the Means aforementioned, is it to be expected that we ought to see it still on the Face of the Earth, as we do the Ocean: For seeing this *Dense Fluid* is much heavier than Water or Earth, it would be at the very Bottom of all, and so either be enclos'd in the Pores and Caverns at the Bottom of the Sediment, or transform'd into a different Body by its Composition with the earthy Parts it was enclos'd withal, and which did consolidate together.

LXXIX. These *Strata* of *Stone*, of *Chalk*, of *Coal*, of *Earth*, or whatever Matter they consisted of, lying thus each upon other, appear now as if they had at first been parallel, continued, and not interrupted: But as if, after some Time, they had been dislocated and broken on all Sides of the Globe, had been elevated in some, and depressed in other Places; from whence the Fissures and Breaches, the Caverns and *Grotto's*, with many other Irregularities within and upon our present Earth, seem to be deriv'd.

LXXIX. When the Sediment settled down gradually upon the Surface of the ancient Earth, it would compose *Strata* or *Layers* as even, continued, and parallel, as one could desire, and as the said Surface did permit. And had the said Surface been fix'd and unalterable, this Evenness and Parallelism, this Uniformity and Continuity of the *Strata* would have remain'd unalterable

also to this Day. But since, as we have formerly shewn, the entire Orb of Earth was at the Beginning of the Deluge crack'd, chap'd, and broken; and for many Years afterwards would, by degrees, settle and compose it self towards its former Figure and Rotundity again; tho' the *Series* and Connexion of the *Strata* might, before they were consolidated, be as regular as you can imagine, yet when the *Basis* or Foundation on which they rested, and the Surface on which they were spread fail'd by degrees, in several Places, and Proportions, by the rising of some Columns upwards, and the settling of others downwards, this upper Orb or Crust, where the *Strata* were not become entirely solid like Stone and Marble, must follow, in great part, the Fate of the other, and be dislocated, elevated, or depress'd in Correspondence to that whereon it rested; and have thereby a Set of Caves and *Fissures* directly over-against those which were before in the ancient Earth. But as for such Places where the new *Strata* were become stony or solid, and incapable of a Compliance with the under Earth, by the settling downward or Elevation of its immediate *Basis* the Primitive Earth, those *Caverns* and *Grotto's*, those *Caves* and *Hollows* which appear within the Earth, or its Mountains, would naturally arise; while the solid *Strata*, like Beams or Arches, sustain'd the impending Columns, notwithstanding the Sinking and Failure of their immediate Foundations; by which Causes the Surface and Upper Regions of the Earth would become very uneven, and full of small Irregularities, such as the present *Phænomena* assure us of.

Corollary 1. Hence we see a plain Reason why Mountainous and Stony Countries are only or principally

pally Hollow and Cavernous : Some lesser Mountains being perhaps occasioned by the Subsidence of the neighbouring Columns, and the Caverns they enclose thereby produced ; and the Solidity of the Strata being the proper Cause of such Caverns in other Cases : Of which the softer, more loose, and pliable Earth was accordingly incapable.

Coroll. 2. *Though the ancient Earth were settled, and become uneven in the same degree, and in the same Places as the present is ; and that before the Consolidation of the new Sediment ; yet the Series of the several Strata one under another on each Side of any Fissure, would in some Measure correspond to one another, as if the consimilar Strata had once been united, and had afterwards been broken and sunk down unequally ; as is manifest from the consimilar Situation and Subsidence of the consimilar Corpuscles ; whereby the like Order and Crassitude of each Stratum might be still preserved, though not so exactly, as if the sustaining Surface had been even and smooth when the Sediment compos'd those Strata, and the Fissures had afterward been made through both Orbs at once, and caus'd such Inequality.*

Coroll. 3. *Hence would arise mighty and numerous Receptacles of Water within the Earth, especially in the Mountainous Parts thereof. For usually where a solid Stratum sustain'd the Earth above, while the Parts beneath sunk lower, and thereby produc'd a Cavern, the Waters would ouze and flow into it from all Quarters, and cause a Conflux or inclosed Sea of Waters in the Bowels of the Earth : Which Cavities might sometimes communicate with one another, or with the Ocean ; and sometimes contain stagnant Waters, without any Outlet : All which are very agreeable to the present Phænomena of the Earth.*

Coroll. 4. *Hence appears the Reason of the raging of Earthquakes in Mountainous Countries, and of the bursting forth and Continuation of Volcano's there. For these Caverns, which we have observ'd the Mountainous Countries to be mainly liable to, are fit to receive and contain together Nitrous and Explosive, Sulphureous and Inflammable Steams, in great Quantities; and withal to admit the Air to fan, and assist that Explosion or Inflammation, which seems to be the occasion of those dreadful Phenomena in our present Earth.*

Coroll. 5. *If therefore there be no other Caverns than these accounted for just now, and taking date from the Deluge; 'tis very probable there were few or no Volcano's; or Earthquakes so much depending on them, before the Flood.*

Coroll. 6. *In case what has been, or might farther be said, be not found sufficient to account for some Observations made, concerning the inward Parts of our Earth; but Dr. Woodward's Hypothesis of the Disruption of the before-united Strata, by a general Earthquake, or the explosive Force of the Steams of Heat ascending from the Central Parts, be found necessary; such a Supposition will by no means disagree with the present Theory. For when the subterraneous ascending Steams were every way stopp'd, and their ordinary Course from the central to the superficial Parts obstructed, by the new Sediment or Crust growing fast and settled, and in some Places stony and impenetrable; they would be every where preternaturally assembled, especially in the Cracks, Breaches and Fissures of the ancient Earth, in greater Quantities than usual, and so might by a violent Rarefaction, or Explosion, burst through the upper Crust, and cause all those Fissures, little Hills, Caverns, Grotto's, and Inequalities which Dr. Woodward's Observations require, and this Proposition takes notice*

notice of. In this case therefore the particular and distinct Consideration of the Phænomena, must determine and arbitrate between the former more natural and gentle, and this latter more violent and extraordinary Method of accounting for the present Face of Nature upon and within the Earth.

LXXX. Great Numbers of Trees, and of other Vegetables, were also, at this Subsidence of the Mass afore-said, buried in the Bowels of the Earth: And such very often as will not grow in the Places where they are now lodged: Many of which are pretty entire and perfect, and to be distinctly seen and consider'd to this very Day.

LXXX. Seeing the latter part of the Deluge, Solut. 58. after the seventeenth Day of the seventh Month, prius. which was either the twenty seventh Day of March, or the first Day of April, was very windy, stormy, and tempestuous; and seeing all along the Waters would have a mighty Current from East to West, especially towards the Beginning of the Deluge, the most extant and mountainous Parts of the Earth would be mightily expos'd to the Fury both of the Winds and Waves; which consequently would tear up, or wash away the loose and unsolid upper Earth, with all its Furniture of Trees and Plants; and not seldom carry them great Distances from their former Seats. Now these Vegetables, if no Earthy, Metallick, or Mineral Masses adher'd to them, being Bulk for Bulk, lighter than the earthy Sediment, would settle down last of all, and would lye upon the Surface of the Earth, and there rot away and disappear. But if considerable Quantities of the heaviest Strata, or of the Metallick or Mineral Matter, as would sometimes happen, adhered to them, they would sink lower, and be inclos'd in the Bowels of the Earth, either near to, or far from

from the Place of their own Growth, according as the Billows and Storms happen'd, to dispose of them. All which Changes and Dislocations of the Soil and Surface, with their Fruits and Plants, might leave once fertile Countries bare and barren; and lodge such Vegetables in others, which of themselves, before the new Sediment, much more since the same, were wholly incapable of such Productions, according to the Exigency of the Proposition before us.

LXXXI. It appears from all the Tokens and Circumstances which are still observable about them, that all these Vegetables were torn away from their ancient Seats in the Spring-Time, in and about the Month of *May*. But then this must be restrain'd to the Vegetables found in these *Northern* Climates; for otherwise, 'tis always all Seasons to one Place of the Earth or other. Otherwise we should have lost a great Part of the *Antediluvian* Plants, even all those whose Seeds were not ripe at the Time when they were born away into the Water.

Solut. §8.
p^{ri}us.

LXXXI. Since we have already prov'd, that the windy and stormy Weather which tore up these Vegetables, did not begin till the seventeenth Day of the seventh Month from the Autumnal Equinox; and since it appears that the higher any Mountain or Continent was, the less while, and in a less degree would the Waters prevail upon it; and so little sometimes, as not wholly to destroy the growing Vegetables, at this due Time of the Year; 'tis evident, that whether the Sediment were newly settled, and had enclos'd them or not, so many as were torn up from these highest Parts of the Earth must be in that Forwardness as the Months succeeding the Beginning of the Storms (*April, May and June*) usually bring them to, very agreeably to the Proposition before us. However, 'tis certain that
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the Waters deriv'd from the Comet's *Atmosphere* it self, which I look upon as the principal Cause of this Deluge, falling upon considerably more than half of the whole Surface of the Earth, and immediately moving with a great, but decreasing Velocity *Westward*, would by degrees arrive at the Place where the *Ark* was built, or at *China*; and as soon as the deepest Part of these Waters approach'd that Place, it would immediately bear it away, and carry it *Westward*; and this prodigious Current of Waters it was, in my Opinion, which mainly wash'd away the Surface of the Earth, especially from all Places at all elevated above the rest; and this Current leaving *Asia* and *Europe* in the Spring-time of the Year, as appears by its bringing the *Ark* by the end of *March* as far as *Armenia*, at this time its lower Parts would be got still much more *Westward*. So that we see a plain Reason why the *European* Vegetables which were then growing on the Earth, and afterwards buried in the Sediment of the Deluge, should all shew the Spring-time for the Date of such their Eradication, it being but a just Consequent of the Position of *Europe*; and of the course and way of the main Current of the principal Waters of the Deluge.

Corollary. Hence the ancient Years beginning at the Autumnal Equinox, and the consequent commencing of the Deluge the seventeenth Day of the second Month from thence, and not from the Spring, is evidenc'd by this very Observation which Dr. Woodward, the Author thereof, supposes would prove the contrary. So that the Time of the Deluge's commencing assign'd by our Hypothesis, appears at last to be confirm'd both by the Scriptures, by the Ancients, by Astronomy,
by

by Geography, and by Natural Observation; and is consequently by so very remarkable a Concurrence and Correspondence of them all, put beyond any reasonable Doubt or Scruple.

LXXXII. All the *Metals* and *Minerals* among the *Strata* of our upper Earth, owe their present Frame and Order to the Deluge, being repos'd therein during the Time of the Waters covering the Earth, or during the Subsidence of the before mention'd Mass.

LXXXII. This can have no Difficulty in it, seeing our upper Earth is *factitious*, and composed of the foresaid Sediment of the Waters of the Deluge; which including the Corpuscles of *Metals* and *Minerals*, as well as others, would alike afford every one those Places which they have ever since possess'd.

LXXXIII. These *Metals* and *Minerals* appear differently in the Earth, according to the different manner of their first Lodgment: For sometimes they are in loose and small Particles, uncertainly inclos'd among such Masses as they chanc'd to fall down withal: At other times, some of their Corpuscles happening to occur and meet together, affix'd to each other; and several convening, uniting, and combining into one Mass, form'd those *Metallick* and *Mineral Balls* or *Nodules* which are now found in the Earth: And according as the Corpuscles chanc'd to be all of a kind, or otherwise, so the Masses were more or less simple, pure, and homogeneous: And according as other Bodies, Bones, Teeth, Shells of Fish, or the like, happen'd to come in their way, these *Metallick* and *Mineral* Corpuscles affix'd to, and became conjoin'd with them; either within, where it was possible, in their Hollows and Interstices; or without, on their Surface and Outsides; filling the one, or covering the other: And all this in different Degrees and Proportions, according to the different Circumstances of each individual Case.

LXXXIII. All these things are but proper Effects of such a common Subsidence of all these Masses

Masses and Corpuscles together in the Chaotick Sediment as is above-mention'd : And no longer or more particular Account is necessary, or can be satisfactory, till Dr. *Woodward's* larger Work, (which we in Time hope for,) affords us the Observations more nicely and particularly than we yet have them. To which therefore the Inquisitive Reader must be referred in this and the like Cases.

LXXXIV. The inward Parts of the present Earth are very irregular and confus'd. One Region is chiefly *Stony*, another *Sandy*, a third *Gravelly*. One Countrey contains some certain kinds of *Metals* and *Minerals*, another contains quite different Ones. Nay, the same Lump or Mass of Earth not seldom contains the Corpuscles of several *Metals* and *Minerals* confusedly intermix'd one with another, and with its own earthy Parts. All which Irregularities, with several others that might be observed, even contrary to the Law of specifick Gravity, in the placing of the different *Strata* of the Earth, demonstrate the original *Fund* or *Promptuary* of all this upper factitious Earth, to have been in a very wild, confused and *Chaotick* Condition.

LXXXIV. Seeing the Sediment of the Waters was compos'd of what earthy Matter was uncertainly brought up out of the inner Earth, and of what a true and proper Chaos afforded, these Phænomena are as natural and accountable therefrom, as on any other mechanical Hypothesis they must appear strange, perplexing, and inexplicable to Philosophick Minds. For certainly by the irregular Disposition of Bodies in such a Chaotick Sediment, and by the as irregular Tempests and Commotions of the Waters, particularly by that constant and notable Current of the main Mass of them from *East* to *West*, arising from their not yet fully accompanying the Earth in its diurnal Motion, and its consequent Effects, the genuine Order, Crassitude, and Position of
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the *Strata*, subsiding still all the while according to their several Specifick Gravities, would be sufficiently disturb'd and interrupted; and upon the whole, just such an irregular Crust would be form'd by the Sediments of Waters as we find in fact this upper one of our Earth really is.

LXXXV. The uppermost and lightest *Stratum* of Soil or *Garden Mold*, as 'tis called, which is the proper Seminary of the Vegetable Kingdom; is since the Deluge very thick spread usually in the Vallies and Plains, but very thin on the Ridges or Tops of Mountains: Which last for want thereof are frequently stony, rocky, bare and barren.

LXXXV. Two plain Reasons are to be given for this Phænomenon: (1.) The Quantity of Water, and its Sediment; and by consequence of Soil or fertile Earth was less over the Mountains than over the Plains and Vallies. (2.) After the Subsidence of the Sediment, and before its entire Consolidation, the Tops of Mountains were most expos'd to the Fury of the Winds and Storms; which would therefore more easily bear away that lightest and least united *Stratum* which lay uppermost in those bleak Places, than in the more retir'd and skreen'd Plains and Vallies; and by diminishing the Soil in the former, and thereby augmenting it in the latter Places, most easily make all things correspond in this Proposition.

LXXXVI. Of the four ancient Rivers of Paradise there are still two remaining, though not exactly in the old Channels: But the other two are so utterly lost, that the *Mosaick* Description does not at all agree to them at present.

LXXXVI. That the great Rivers would still retain in great measure their old Courses, has been observ'd already: And seeing the Fountains,
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and the general Inequalities of the Earth, on which their Origin and Channels depend, were the same generally before as since the Deluge, there can be no doubt thereof. As to the Rivers of *Paradise* themselves, their Channels being now bury'd perhaps more than an hundred Feet under the Sediment of the Waters of the Deluge, 'tis in vain to expect that the Postdiluvian Rivers should correspond to the Description of those Antediluvian ones. 'Tis well that the present *Tigris* and *Euphrates* are not so much chang'd as the rest, that we may not be destitute of all means for the finding out the original Situation of those four Primitive Rivers, and thereby of that Country and *Garden of Eden*, which was the primary Habitation of Mankind.

LXXXVII. Those *Metals* or *Minerals* which the *Mosaick* Description of *Paradise*, and its bordering Regions, takes such particular notice of, and the Prophets so emphatically refer to, are not now met with so plentifully therein.

LXXXVII. The present upper Earth being, as we have seen, factitious, and a new Crust since the Flood covering over the ancient Surface thereof, those primitive Treasures must lie too deep in the Bowels of the present Earth to be easily approach'd by us, and so are entirely lost as to the present Use or Enjoyment of Mankind.

LXXXVIII. This Deluge of Waters was a signal Instance of the Divine Vengeance on a wicked World; and was the Effect of the peculiar and extraordinary Providence of God.

LXXXVIII. Tho' the passing by of a Comet, and all those Effects of it in the drowning of the World, of which we have so largely discours'd hitherto, be not to be stiled in the common use
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Vid. Solut.
2. prius.

of the Word, *Miraculous*, (though in no very improper Sense, all such Events may have *that* Appellation, of which before;) yet is there the greatest Reason in the World to attribute this mighty Turn and Catastrophe of Nature, to the Divine Providence, and the immediate, voluntary, actual Interposition of God; and that in these ensuing Particulars, and on these following Accounts; which I shall be the shorter upon, as having in the Place fore-mention'd explain'd my Mind somewhat largely about things of this Nature. (1.) The Bodies made use of in this and the like Changes of Nature, are originally the Creatures of God, and continually preserv'd by him; and so what they are instrumental in, ought most justly to be ascrib'd to the principal Cause, the great Creator and Conservator of them all. (2.) All those Powers of Attraction or Gravitation, &c. and those Laws of Motion by which these Bodies are capable of producing such Effects, are alike owing to the Divine Operation, Appointment, and Efficacy, both in their primitive Impression, and continual Energy; and so still the Effects themselves are to be ascribed to a Divine Original. (3.) That particular Constitution of the Earth on the Face of the fluid Abyss, and other such Dispositions, whereby it became subject to an universal Deluge, were also the Consequents of the Divine Power and Providence in the Formation of the Earth. (4.) That peculiar Situation or Constitution of the Orbits and Motions of Comets, whereby they, by reason of their passing through the Planetary System each Revolution, are fit to cause such great Mutations in it, was the Effect of the particular Order and Disposition of God, in the primary Frame of the Universe. (5.)

The

The Coincidence of the Trajectory of a Comet's Orbit either exactly or nearly with the Line of the Earth's Orbit can have no other Foundation in Nature, than a like design'd and contriv'd Appointment of God. (6.) The so nice and exact Adjustment of the Motions of both the Comet and the Earth; that the former should pass just so near, and impart such a certain Quantity of Waters, neither more nor less than would drown the World, and just cover the highest Mountain, and yet reach no farther; in short, as would secure the Ark for future Generations, and yet not leave one dry-Land Animal besides alive; this Exactness is a most peculiar and strange Effect of the most wise and sagacious Providence of God in this mighty Revolution. But (7.) Lastly, (to omit repeating some things before observ'd as we pass'd along) The precise *Time* of the passing by of the Comet, and thereby of destroying the World, is, in the most peculiar Manner and highest degree, the result of the divine Providence. That exactly at a time which was fit and proper, and in an Age that justly deserv'd so great a Judgment, the Comet should come by, and overwhelm the World, is very remarkably and extraordinarily the Finger of God himself. That Omniscient Being who foresaw when the Degeneracy of human Nature would be arriv'd at an *unsufferable* Degree of Wickedness, the Iniquities of the World would be compleatly *full*; and when consequently his Vengeance ought to fall upon them; predisposed and preadapted the Orbits and Motions of both the Comet and the Earth, so that at that very Time, and only at that very Time, the former should pass close by the latter, and bring that dreadful Punishment

upon them. Had not God Almighty on purpose thus adjusted the Moments and Courses of each, 'twere infinite odds that such a Conjunction or Coincidence of a Comet and a Planet, would never have happen'd during the whole Space, between the Creation and Conflagration of this World; much more at such a critical Point of Time when Mankind, by their unparallel'd Wickedness were deserving of, and only dispos'd for this unparallel'd Vengeance, no less than almost an utter Excision.

And this I take to be the Secret of the Divine Providence in the Government of the World, and that whereby the Rewards and Punishments of God's Mercy and Justice are distributed to his rational Creatures, without any Disturbance of the settled Course of Nature, or a miraculous Interposition on every Occasion. Our Imperfection is such that we can only act *pro re nata*, can never know before-hand the Behaviour or Actions of Men; neither can we foresee what Circumstances and Conjunctions will happen at any certain Time hereafter; and so we cannot provide for future Events, nor predispose things in such a manner that every one should be dealt with, or every thing done no otherwise than if we were then alive and present, we should think proper and reasonable, and should actually do. But in the divine Operation 'tis quite otherwise: God's Prescience enables him to act after a more sublime Manner; and by a constant Course of Nature, and Chain of Mechanical Causes, to do every thing so, as it shall not be distinguishable from a particular Interposition of his Power, nor be otherwise than on such a particular Interposition would have been brought to pass. He who
has

has created all things, and given them their several Powers and Faculties, foresees the Effects of them all: At once looks through the entire Train of future Causes, Actions, and Events, and sees at what Periods, and in what Manner 'twill be necessary and expedient to bring about any Changes, bestow any Mercies, or inflict any Punishments on the World: Which being unquestionably true, 'tis evident He can as well provide and predispose natural Causes for those Mutations, Mercies or Judgments before-hand, he can as easily put the Machine into such Motions as shall, without a Necessity of mending or correcting it, correspond to all these foreseen Events or Actions, as make way for such Alterations afterward by giving a random Force to the whole: And when these two Ways are equally possible, I need not say which is most agreeable to the Divine Perfections and most worthy of God. So that when the universal Course of Nature, with all the Powers and Effects thereof, were at first deriv'd from, and are continually upheld by God; and when nothing falls out any otherwise, or at any other time, than was determin'd by divine Appointment in the Primitive Formation of the Universe: To assign Physical and Mechanical Causes for the Deluge, or such mighty Judgments of God upon the Wicked, is so far from taking away the Divine Providence therein, that it supposes and demonstrates its Interest in a more noble, wise and divine Manner than the bringing in always a miraculous Power would do. Let us suppose a *Fulmen* or Thunderbolt originally, and on purpose, put into such a Motion, as without any farther Interposition of Providence, would direct it to the Head of a Blasphemer;

and whilst he was cursing his Maker, strike him dead upon the Spot; which the Prescience and Power of God shew to be equally possible with a present Miracle: I think such a violent Death would be as properly *extraordinary*, and a *Divine Judgment*, as any other whatsoever: Which I take to have been the very case of the Deluge, which I am here peculiarly concern'd about. *Nature is God's Constitution*, and ever subservient to him; and the State of the *Natural* is always accommodated to that of the *Moral* World. What is done by *Nature* and *Second Causes*, is most properly done by God at last, who is ultimately and really almost all we can mean by those Names.

Corollary. *What has been here said upon this Occasion, if rightly understood and apply'd to all other Cases, would clear our Minds from many of those Perplexities about the Divine Providence which are ready to disturb them. For Instance: We pray to God for fruitful Seasons, for Health, for Peace, for the Success of our Endeavours, for a Blessing on our Food and Physick, and deprecate the contrary Miseries from us: Yet at the same time we see the Seasons depend on the settled Course of the Sun, or other natural and necessary Causes; we find our Health or Sicknes to be the proper Effects of our Diet and Regimen; we observe Peace and War subject to the Intrigues of Princes, and the plain Results of visible Conjunctions in human Affairs; we know that worldly Prudence and Cunning has a main Stroke in the Success of Mens Labours; we feel the advantageous Effects of some Food and Physick, and have Reason to believe the same does very much result from the Goodness of the Drugs, the Fitness of the Proportion, the Disposition of the Body, and the Skill of the Physician;*

cian; and can frequently give a plain and Mechanical Reason of the different Operations of all those things; neither do we hope for the Exercise of a miraculous Power in these or the like Cases. The Consideration and Comparison of all these things together frequently puzzles the Minds of good Men, especially those that are more Contemplative and Philosophical, and makes them wonder what Interest our Devotions, or what Advantage our Prayers can have. Second Causes will work according to their Natures, let Men's Supplications be never so importunate: And to expect a Miracle in answer to every Petition, is more than the most Religious dare pretend to. This Dilemma has had a contrary Effect upon the Minds of Men; while the Philosopher was in Danger of doubting of the Success, and so ready to grow cold in his Devotions; and the more unthinking, yet more religious, Man rejected the Consideration of the Manner, or the Operation of second Causes, and more wisely look'd up only to God, and imagin'd him immediately concern'd in every Occurrence, and on that Principle doubted not the Effect of his Prayers. But 'tis, methinks, evident that neither of these were exactly in the Right; and equally so, that the due Consideration of what has been abovesaid, would prevent the Dilemma, and take away all reasonable Scruple. 'Tis true, that Natural Causes will operate as usual. 'Tis also true that Miracles are not ordinarily to be expected: But withal 'tis as true that the same all-wise Creator, who appointed that constant Course of Nature, foresaw at the same time all those Dispositions of Men, and in particular those Devotions of his Worshippers, to which suitable Rewards were to be provided, and suitable Answers returned; and therefore has so ordered the Series of Natural Causes, as to make that very Provision for the same, which otherwise he would have done

by the miraculous Interposition of his Providence; and which therefore is equally to be ascribed to him with the greatest Wonders. 'Tis true, the Frame of Nature is now constant and settled: But 'tis true also that it was so settled on the Prospect of the moral Behaviour, and in correspondence to the good or bad Actions of Mankind, foreseen and presupposed in the Primitive Constitution of all: And by Consequence whatever Benefits or Afflictions the constant Course of Nature and second Causes bring to us, are equally capable to be the Matter of our Prayers or Deprecations, of our Humiliation or Gratitude before God, as the immediate Effects of a miraculous Power; and the Divine Providence no less to be acknowledged and addressed to in the former than in the latter Case. But because our Imperfection is so great that the Consideration of the Priority of the future Actions of Men to the Prescience of God in the Order of Nature; and the Dependance of the latter on the former, is too high for our Comprehensions, and tho' demonstrable by, yet inscrutable to the Reason of Mankind; and because we are therefore still ready to conceive what is foreknown by God to be necessary and inevitable; let the moral Behaviour of Men be as it will: Because, I say, this Prescience of God is too Divine a thing to be easily penetrated and applied by us to all Occasions, I confess 'tis the most Obvious and the most Prudent, as well as the most Scriptural Way to keep within our Faculties, and always to suppose an immediate Exerting of a new Power in every new Turn in the World; and without the troublesome Inquisition into the Nature and Design of the Primitive Constitution of the Material World, to refer all Things to an immediate Providence: Into which every one must ultimately and originally be resolved, and which has as well and as congruously
 taken

taken care of all Events, as if such a miraculous Efficiency were really concerned on every individual Occasion. Which whole Matter thus explained, may be of Use to those who through the not understanding the Method of the Divine Providence, and its Consistency with an uninterrupted Course of Nature, have perplexed their own Minds, and endangered their Religion: Which pernicious Scruples true Philosophy, when rightly understood, is the only Means of dispelling and preventing. Nothing being more true or more momentous than this, that 'tis ever our Ignorance or Mistakes only, that fully the Providence of God, or diminish our religious Affections to him.

LXXXIX. Since the Deluge there neither has been, nor will be any great and general Changes in the State of the World, till that Time when a Period is to be put to the present Course of Nature.

LXXXIX. Seeing we know no other Natural Causes that can produce any great and general Changes in our sublunary World, but such Bodies as can approach to the Earth, or, in other Words, but *Comets*; and seeing withal, the next Approach of a Comet, will, in probability, bring the present State of Things to a Conclusion, and *Burn* the World, of which presently; 'tis evident the Earth is secure enough all the intermediate Space: And as hitherto we accordingly find it has been, so we need not fear but it will be, preserv'd till the fore-mention'd *Conflagration*.

Scholium. That Comets are not incapable of causing such great Changes as I have here already, or shall afterwards ascribe to them, give me leave to quote the Testimonies of two great Astronomers and very competent Judges in this case: I

Astron. p. 481. mean the two famous Oxford Professors, the late Dr. Gregory and Dr. Halley. The Words of the former are these: *Alius etiam erit quandoque Cometæ sive effectus sive usus: Si nempe Cometa prope Planetam transeat, (ita ferentibus eorum Orbitis & motibus) hunc ita attrahet ut ejus Orbita immutetur, (mutatâ etiam ex mutua actione Cometæ Orbita) unde Planetæ Periodus etiam mutabitur. Sed & Satellitem ita per attractionem deturbare poterit Cometa, ut, relicto suo Primario, ipse evadat Primarius, circa Solem deinceps rotatus. Præterea, mutationes multo maximas in ipso Planetæ Globo producere poterit, non solum proleſtando fluidum, si quod sit, sed per alias etiam qualitates; si v. g. corpus tam vastum, & si ex solis vicinia prodeat, ignitum, Tellurem nostram è propinquo prætervebatur. Dr. Halley's Words are*

A&T. Philosoph. p. 1898, 1899. N^o. 297.

as follow: *Inter omnes Nullus proprio appulsu Terris minatus est quam ille anni 1680. Hic inito Calculo non amplius ad Boream distabat ab Orbe nostro annuo quam semidiametro Solari, (sive radio Lunaris Orbitæ, uti existimo,) idque Novemb. 11^o. 1^h. 6'. P. M. Quo tempore, si Terræ quoad Longitudinem conjunctus fuisset, Parallaxis sane Lunari æqualis in Cometæ motu observari potuisset. Hæc Astronomis dicta sunt: Quæ vero ab hujusmodi allapsu vel contactu, vel denique collisione Corporum cælestium (quæ quidem omnino non impossibilis est) consequi debeant; rerum Physicarum studiosis discutienda relinquo.*

Scholium 2. Having now finish'd my Account of the Deluge, I shall here add a mighty Attestation which the most considerable Adversary of my Theory, has given to this part of it: And being the Confession of an Adversary, Dr. Keill, and therefore to be sure no other than what was extorted by the plain Force of Reason and Argument,

ment, is, I think, of great Consequence in the present case, and sufficient to induce all others who are either less competent Judges of the Nature of that Evidence I have brought, or have not so carefully consider'd it, to re-examine it more carefully than they have yet done, and not to be deterr'd by any lesser Mistakes I may have been at first guilty of, from enquiring whether in the main I have not Evidence for what I have asserted. Dr. Keill's Words are these: *I cannot but acknowledge, that the Author of the New Theory of the Earth, has made greater Discoveries, and proceeded on more Philosophical Principles, than all the Theorists before him have done. In his Theory there is some very strange Coincidents, which make it indeed probable, that a Comet at the Time of the Deluge pass'd by the Earth. It is surprizing to observe the exact Correspondence between the Lunar and Solar Year, upon the Supposition of a Circular Orbit, in which the Earth moved before the Deluge. It cannot but raise Admiration in us, when we consider, that the Earth at the Time of the Deluge was in its Perihelion, which would be the necessary Effect of a Comet that pass'd by at that Time, in drawing it from a Circular to an Elliptical Orbit. This, together with the Consideration that the Moon was exactly in such a Place of its Orbit at that Time, as equally attracted with the Earth, when the Comet pass'd by, seems to be a very convincing Argument that a Comet really came very near, and pass'd by the Earth, on the Day the Deluge began.*

CHAP. V.

A Solution of the Phænomena relating to the General Conflagration; and of the Conjectures pertaining to the same, and to the succeeding Period, till the Consummation of all Things.

See Cicero
De Nat.
Deor. l. 2.
c. 46.

XC. **A**S the World once perished by Water, so it must by Fire at the Conclusion of its present State.

XC. As we have given an Account of the *Universal Deluge* from the Approach of a Comet in its *Descent towards* the Sun; so will it not be difficult to account for the *General Conflagration* from the like Approach of a Comet in its *Ascent from* the Sun. For 'tis evident from what has been already explain'd, that in case a Comet pass'd behind the Earth, though it were in its Descent, yet if it came near enough, and were it self big enough, it would so much retard the Earth's annual Motion, and oblige it to revolve in an *Ellipsis* so near to the Sun in its *Perihelion*, that the Sun it self would scorch and burn, dissolve and destroy it in the most prodigious Degree; and this Combustion being renew'd every Revolution, would render the Earth a perfect *Chaos* again, and change it from a Planet to a Comet for ever after. 'Tis evident *this* is a sufficient Cause of a general Conflagration with a Witness; and such an one as would entirely ruin the Make of the present,

present, and the Possibility of a future World. On which last Account, if we allow the following Phænomena, we must not introduce *this*, at this Period however; but see whether a Conflagration of a less destructive, and more refining Nature be not to be expected, and may not be accounted for. And here let it be observ'd, that the Central Heat of it self seems sufficient to burn up, and dissolve the upper Earth; (as those who with Dr. *Woodward*, own the Power and Vehemence of the same now, and its astonishing Force, and terrible Effects in Earthquakes, Eruptions of *Volcano's*, and other Phænomena of present Nature, ought to allow;) if these two Things were by any means remov'd; I mean the Waters of the Seas and Ocean, and the Coldness of the Air: For 'tis the vast Quantity of Waters of the Earth, and the Coldness of the middle Region of the Air every where, and of the whole Air in the *Frigid Zones*, returning the Vapours *cold down* again, which were sent *up* into them never so *hot*, which seems still to prevent the Effects of the subterraneous Heat, and to hinder the Conflagration of the Earth. If therefore the passing by of a Comet be capable of emptying the Seas and Ocean, and of rendring the Air, and its contiguous upper Surface of the Earth extremely hot and inflam'd, no more, I suppose, will be necessary to a general Conflagration: Or if any more Assistance be afforded by the Presence of the Comet, it will be *ex abundanti*, and only contribute still the more certainly, and the more suddenly, to kindle such a fatal Fire, and so dreadful a Combustion. Now that both those requisite Conditions for a general Conflagration would be the Consequents of this

Passage

Passage of an ascending Comet, is plain and evident: For (1.) On the Approach of the Comet, a vast Tide would arise in the great Abyfs; and by the new, more considerable, and more violent Elevations thereof into the Protuberances and the Spheroid Surface of the whole, the old Fissures and Breaches would be open'd again, and not a few new ones generated; not only, as at the Deluge, in the Mountainous or more loose Columns, extant above the Surface of the Waters of the Globe; but in all Parts, and under the Seas and Ocean, as well as in other Places; which Fissures must immediately swallow up the main Mass or Bulk of the Waters upon the Face of the Ground, and send them to their Fellow Waters in the Bowels of the Earth; which was the first and principal Step towards a general Conflagration. And then (2.) The Vapours acquir'd from the Comet's Atmosphere, which at the Deluge were, by reason of their long Absence from the *Sun* in the remote Regions beyond *Saturn*, pretty cool; at this Time must be suppos'd, by reason of their so late and near Approach to the *Sun* about the *Perihelion*, exceeding hot and burning; and that to so extraordinary a Degree, that nothing but the *Idea* of the Mouth of a *Volcano*, just belching out immense Quantities of liquid and burning Steams, or Torrents of fiery Matter, can in any measure be suitable to the Violence thereof. Imagine therefore, the Earth to pass through the very middle of this Atmosphere, for 10,000 Miles together, and to bear off with it a *Cylindrical* Column thereof, whose *Basis* were somewhat larger than a great Circle on the Earth, and whose Altitude were the Number of Miles just now mention'd; and then

then tell me whether the *Air*, and its adjoining uppermost Region of the Earth, will not be sufficiently hot and scorching; which was the other Step to the general Conflagration. Besides all which, what Quantities of this fiery Exhalation, or Torrent of melted liquid Matter would run down the Fissures into the Bowels of the Earth, and by joining with the Central hot Steams already there, invigorate them, and accelerate the direful Inflammation; and what piercing and scorching fiery Corpuscles the Central Body it self during its Vicinity, would also send out; and what an additional Power would thereby be afforded the prevailing Heat, I need not say. Upon the whole, I may appeal to the Reader, if the Concurrence of all these external Causes, to say nothing here of any internal Dispositions in the Earth, it self thereto, do not appear abundantly sufficient within a little Time to set the World on Fire, and bring on that terrible Conflagration which both Sacred and Profane Testimonies conspire to forewarn us of; and so whether the *Theory of Comets* does not afford us almost as commensurate and compleat an Account of the *future Burning*, as it already has done of the *ancient Drowning* of the Earth.

Vid. Theo.
l. 3. c. 7.
&c.

XCI. The same Cause which will set the World on Fire, will also cause great and dreadful *Tides* in the *Seas*, and in the *Ocean*: with no less Agitations, Concussions, and *Earthquakes* in the *Air* and *Earth*.

XCI. Seeing the Eruption of the Central Heat, (the Cause, 'tis probable, of all our Earthquakes) the Presence of a Comet; (the Cause once already of the most prodigious Tides that

that ever were) and the inflam'd Chaos, or scorch'd Atmosphere of a Comet, (a smaller Part of which probably has occasion'd all our Tempests, our Meteors, our Thunder and Lightning ever since the Deluge) will all concur at once, and with joint Forces conspire together; nothing in the World can be suppos'd more terrible, nor more exactly correspondent to the Phænomenon before us.

XCII. The Atmosphere of the Earth, before the Conflagration begins, will be oppress'd with Meteors, Exhalations, and Steams; and these in so dreadful a manner, in such prodigious Quantities, and with such wild confused Motions and Agitations, that the Sun and Moon will have the most frightful and hideous Countenances, and their ancient Splendor will be entirely obscur'd; the Stars will seem to fall from Heaven; and all manner of horrid Representations will terrify the Inhabitants of the Earth.

XCII. Those who consider how great a Comet's Atmosphere appears to us after its Perihelion, and what large Quantities of its newly scorch'd Masses our Air must be clogg'd and burthen'd withal, will expect no other Effects than those here mention'd; and will easily believe that all such horrible Appearances would ensue, and that in the most amazing Degree, and extravagant Instances possible. The *Theorist's* Representation of this Matter will be, generally speaking, but a fair and just Idea thereof.

Theor.

l. 3. c. 11.

XCIII. The *Deluge* and *Conflagration*, are referr'd, by ancient Tradition, to great Conjunctions of the Heavenly Bodies; as both depending on, and happening at the same.

XCIII. In our Accounts of the Deluge and Conflagration, there is a notable Conjunction of

of the heavenly Bodies indeed; not such an imaginary one as the Astrologers so ridiculously make a stir about; the bare Position of two or more of the celestial Bodies in or near the same streight Line, from the Eye of the Spectator, while they are at the most remote Distances from one another; which is a poor jejune Thing indeed: But a real one with a Witness; when three of the heavenly Bodies, the Earth, the Moon, and the Comet, not only are in an Astrological Heliocentrick Conjunction, or only seem to an Eye in the Sun to be conjoin'd together, but are really so near as to have the mightiest Effect and Influences on one another possible; which we have sufficiently shewn in the present *Theory*, and which does peculiarly correspond to the Phænomenon before us.

Corollary. 'Tis not impossible but the ancient Tradition, that the Deluge and Conflagration some way depended on certain remarkable Conjunctions of the heavenly Bodies, misunderstood, and afterward precariously and widely misapply'd, might give Occasion and Rise to Astrology; or to that mighty Quoil and Pother so many in all Ages have made about the Conjunctions, Oppositions, and Aspects of the heavenly Bodies, and the Judiciary Predictions therefrom; which even the Improvements of solid Philosophy in our Age have not been able yet to banish wholly from among us; the Occasion whereof is otherwise exceeding dark and unaccountable.

XCIV. This general Conflagration is not to extend to the entire Dissolution or Destruction of the Earth, but only to the Alteration, Melioration, and peculiar Disposition thereof into a New State, proper to receive those Saints and

and Martyrs for its Inhabitants, who are at the first Resurrection to enter, and to live and reign a Thousand Years upon it, till the second Resurrection, the general Judgment, and the final Consummation of all Things.

Lem. 68. XCIV. Seeing the Abyfs consists of a dense
cum Co- and compact Fluid, not capable of any Rare-
roll. prius. faction or Dissolution by the most violent
Heat imaginable, 'tis evident that the Causes
here assigned can only extend to the upper
Orb, or habitable Earth, without any farther
Progress. So that the Effect of this Conflagra-
tion will be the Reduction of this upper Earth,
and its Atmosphere, into a confus'd, mix'd, and
Chaotick State; much such an one as was before
observ'd to have preceded the original Forma-
tion of it. So that as the Heat decreases, 'tis
but reasonable to expect a kind of Reiteration
of the *Mosaick* six Days Creation, or a Renova-
tion of the Primitive State of the Earth; to the
Description of which therefore I must refer the
Reader.

XCIV. The State of Nature during the *Millennium* will be
very different from that at present, and more agreeable
to the *Antediluvian*, *Primitive* and *Paradisiacal* ones.

XCIV. This is apparent from the Conclusion
of the former *Solution*.

XCVI. The Earth in the *Millennium* will be without a
Sea, or any large Receptacle filled with mighty Col-
lections and Quantities of Waters.

Solut. 6, & XCVI. The Primitive Seas depended main-
7. prius. ly on two Things; the former, the Concur-
rence of the Central and Solar Heat for no less
than nine or ten Months together, in the Ele-
vation of sufficient Quantities of Vapours: The
latter,

latter, the Earth's considerable Solidity attain'd before the Descent of the same Vapours which were to compose the Seas, of which we are speaking : So that if either of these be wanting in this reiterated Formation of the Earth, 'tis evident the Effect must fail, and the *Globe* be no longer a *Terraqueous* one after the Conflagration. Now the next Proposition but one, asserting the Probability of the entire Absence of the Sun, must infer a Probability of the entire Absence of Seas also, according as this Proposition asserts.

XCVII. The Earth in the *Millennium* will have no Succession of Light and Darknefs; Day and Night; but a perpetual Day.

XCVII. In case the Earth's diurnal Rotation, upon which these Vicissitudes depend, were retarded so as to be only exactly equal and commensurate to its annual Motion, (which is the Case in the Moon's diurnal and menstrual Revolution at present, as we have before observ'd) the Earth would constantly expose the same Lem. 42. Hemisphere to the Sun, (as the Moon does now prius. to the Earth) and all Succession of Day and Night for ever cease; the one half of the Globe enjoying a perpetual Day, while the other was involv'd in Darknefs, or excluded all Advantages from him, and thereby enduring a continual Night; so far as natural Causes are here to be consider'd. And that this Retardation of the Earth's diurnal Rotation (even without a recurring to the miraculous Power of its first Author) is accountable from that passing by of a Comet, which we assign for the Occasion of the Conflagration, is very easy and obvious: For in case its Ascent and Passage by, be on the *East Side*, or before the Earth; and in case it

N n approach

approach so near as to rub against it, 'tis evident such an Impulse is contrary to the Course of the diurnal Rotation, and is therefore capable (the Proportions of every Thing being adjusted by Divine Providence) of putting such a Stop to the same as is necessary to the present Phænomenon, and so may put a Period to that constant Succession of Light and Darkeness, Day and Night, which has obtain'd ever since the Fall of Man; and withal distinguish the Surface of the Earth into two quite different and contrary Hemispheres; near the *Vertex* of one of which the Sun it self, and near that of the other, its opposite Point in the Heavens, will be always situate.

Corollary. *Seeing such a Rub of the Comet would affect the annual Motion of the Earth as well as the diurnal, 'tis possible it might retard the former as well as the latter, and reduce the Elliptical Course and Orbit of the Earth, to its ancient Circular one again, or into some other Elliptical one of a very different Species from the present.*

XCVIII. The State of the *Millennium* will not stand in need of, and so probably will be without the Light and Presence of the Sun and Moon.

XCVIII. Seeing the Earth would be on the foregoing Supposition distinguished into two quite different Hemispheres, the one of which would be wholly destitute of the Light and Presence of the Sun; and, so far as appears by St. *John*, supply'd by a supernatural Light, fix'd and permanent above its *Horizon*, (at least as to the main and middle Parts of it, distinct from those darker four Corners of the Earth, whence *Gog* and *Magog* shall at length attempt to destroy the

the Saints inhabiting there, and which possibly may be the $\Sigma\acute{o}\tau\omicron\ \&\ \epsilon\acute{\xi}\omega\tau\epsilon\rho\omicron\nu$ so often mention'd in the New Testament:) 'tis clear that the first Branch of this Proposition is accountable thereby, so far as this Physical Theory is concern'd therein. And as to the *Moon*, seeing 'twas only a signal and peculiar Providence that caus'd her equal Acceleration, and consequent accompanying the Earth at the former passing by of the Comet; and that no such Providence need here be expected; 'tis evident that that Rub or Stoppage of the *Earth's Annual Motion*, which retards the same, and does not retard the Moon's also, may separate these Planets, and procure their Orbits, Courses, and Periods to be quite different from one another's ever after; according to the greatest Rigour of the present Proposition.

Vid. etiam Apoc. xxii. 14, 15.
Vid. Gregor. Astronom. ad Schol. I. Solut. 92. prius citat.

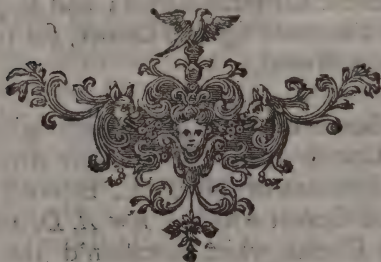
XCIX. At the Conclusion of the *Millennium*, the Final *Judgment* and *Consummation* of all things, the Earth will desert its present Seat and Station in the World, and be no longer found among the Planetary *Chorus*.

XCIX. If any Comet instead of passing by, or gently rubbing the Earth, hit directly against it, in its Course either towards or from the Sun, it must desert its ancient Station, and move in a quite different Elliptick Orbit; and so probably of a Planet become again a Comet, for the future Ages of the World.

N. B. Some of the Figures belonging to the Comet's Course at the Deluge were fitted to the two first Editions of this Book, before I suspected that the Comet which I saw *A. D. 1681*, was that very Comet which occasion'd the Deluge. They ought to have the Angle between the Trajectory of the Comet, and the Line connect-

ing the Sun and Comet about 35° where the Moon will be about $2^d\ 21^h$ past the Syzygy. The nearest Distances also, $a-f$ and $\propto y$, *Fig. 2.* ought to be greater, and the Comet it self larger than before, to compensate the same. Nor does the Observation of the Comet's Bigness properly contradict either the former or latter Hypothesis. Any Exactness in the Measure of even its Diameter not being to be had; and its particular Density being wholly unknown also.

N. B. It is fit here to rectify one considerable Mistake in *pag. 217.* where the Note ought to run thus: And there is no more Difference in the Case of the *Samaritan* Numbers, than that we are obliged to abate $\frac{1}{3}$ in the supposed Motion of the Perihelion: Which as it seems of late quicker than in the old Astronomy; so may it be allow'd to have gone still somewhat slower in the more ancient Ages, next after the Deluge. Nor will the Positions and Revolutions of the several Comets through the Planetary Regions admit of a perfect Uniformity in such Motions.





COROLLARIES

From the WHOLE.

I. *SEEING the new and solid Improvements of Philosophy do all along give such rational Accounts of those ancient Theorems, which have been propagated down from the eldest Ages, without being then understood, or intelligible to their Propagators; 'tis reasonable to trust and rely on such Ancient Traditions, not only Sacred, but Prophane also, in these or any other parallel Cases; they being in all Probability the most valuable Remains, and most venerable Truths which the primitive Parents of the World deliver'd down to their Posterity in succeeding Generations.*

II. *Seeing most of these ancient Theorems are very much beyond the distinct Knowledge of those who deliver them; contrary to the common Opinion of Mankind, judging usually by sensible Appearances; and in themselves, considering the low State of Natural Knowledge at the same Times, were highly improbable, if not utterly incredible to inquisitive Minds: and indeed several of them relating to the Chaos, the Creation, the primary Constitution and State of the World, and the Deluge it self, impossible to be discovered without Supernatural Revelation; and yet seeing, after all,*

they do now appear almost as agreeable to Reason, and the most solid Mechanical Philosophy, as any new Discoveries, built on the exactest Observations of present Nature whatsoever; 'tis apparent that these ancient Accounts, especially those contain'd in the Holy Scriptures, were not originally deriv'd from the Natural Skill and Observation of the first Authors, or any other meerly Human Means, but from the immediate and Supernatural Revelation of God Almighty; who was therefore much more conversant with Mankind in the first, than he has been in these last Ages of the World; as the Old Testament-History every where assures us.

III. The Measure of our present Knowledge ought not to be esteem'd as the Κεῖνέσιον, or Test of Truth; or to be oppos'd to the Accounts receiv'd from prophane Antiquity, much less to the inspired Writings. For notwithstanding that several Particulars relating to the eldest Condition of the World, and its great Catastrophes, examin'd and compar'd with so much Philosophy as was till lately known, were plainly unaccountable, and, naturally speaking, impossible; yet we see, now Nature is more fully, more certainly, and more substantially understood, that the same Things approve themselves to be plain, easy, and rational.

IV. 'Tis therefore Folly in the highest Degree, to reject the Truth, or Divine Authority of the Holy Scriptures, because we cannot give our Minds particular Satisfaction as to the manner, nay or even possibility of some things therein asserted. Since we have seen so many of those things which seem'd the most incredible in the whole Bible, and gave the greatest Scruple and Scandal to Philosophick Minds,

so

so fully and particularly attested, and next to demonstrated from certain Principles of Astronomy and Natural Knowledge; 'tis but reasonable to expect, in due Time, a like Solution of the other Difficulties. 'Tis but just, sure, to depend upon the Veracity of those holy Writers in other Assertions, whose Fidelity is so entirely establish'd in these hitherto equally unaccountable ones.

V. The obvious, plain, or literal Sense of the sacred Scriptures, ought not, without great Reason, to be eluded or laid aside: Several of those very Places, which seem'd very much to require the same hitherto, appearing now to the minutest Circumstances, true and rational; according to the strictest and most literal Interpretations of them.

VI. We may be under an Obligation to believe such Things on the Authority of the Holy Scriptures as are properly Mysteries; that is, though not really Contradictory, yet plainly Unaccountable to our (present Degree of) Knowledge and Reason. Thus the sacred Histories of the Original Constitution, and great Catastrophes of the World, have justly been in the past Ages the Objects of the Faith of Jews and Christians, though the Divine Providence had not afforded so much Light, as that they could otherwise satisfy themselves in the Credibility of them, till the new Improvements in Philosophy. And this is but just and reasonable; for sure the Ignorance or Incapacity of the Creature does by no means afford sufficient Ground for Incredulity, or justify Men in their rejecting Divine Revelation, and impeaching the Veracity or Providence of the Creator.

VII. Seeing the Natural and the Moral World are alike subject to the Divine Providence, and that

the same Author has indited those Writings which relate to both; the Discovery of the Verity of the Holy Scriptures in the most difficult Points relating to the one, ought to make us entirely secure of the like Verity of the same Scriptures relating to the other; notwithstanding any Difficulties still remaining about them. As the wise, proportionate, and harmonious Order and Regularity of the Natural World, where no Freedom of the Creature interposes, and gives any Occasion for Disorder, justly obliges us to believe the most wise and equal Methods of Providence to be equally exercised about the Moral one also; although the Intricacies arising from the Abuse of the Liberty of Will in rational Creatures, render them hitherto more obscure to us in the latter Case than in the former: So certainly the Establishment of the Verity of the Scriptures in the most harsh and difficult Assertions touching the Natural World, (the proper Case in which the Improvement of Philosophy was likely to afford Means for our Determination) ought to assure us of the like Verity of the same Scriptures in the other Points, more particularly the Subjects of Divine Revelation, less capable of affording any other Means of Satisfaction, and yet more directly the Design, Scope, and Drift of the Sacred Writers, and the Concern of Divine Providence than the other.

Τῷ δὲ Βασιλεῖ τῶν Αἰώνων Ἀφθάρτῳ, Ἀσείτῳ,
Μόνῳ Σοφῷ Θεῷ Τιμὴ καὶ Δόξα εἰς τὰς Αἰώνας τῶν
Αἰώνων. AMHN.

A N
APPENDIX,
CONTAINING A
NEW THEORY
OF THE
DELUGE:

BEING A

Plain Abstract of what the AUTHOR
has said on this Subject in different
Treatises.

APPENDIX

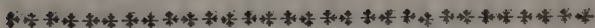
NEW THEORY

DELUCE


THE HISTORY OF THE
REIGN OF THE
KING OF FRANCE



A NEW
THEORY
OF THE
DELUGE.



PREPARATORY PROPOSITIONS.

I. OMETES are a Species of Planets, or Bodies revolving regularly about the Sun; and this in such eccentric Elliptick Orbits as are nearly Parabolical.

II. The Plains in which the several Comets revolve are exceeding different from, and at all imaginable Angles of Inclination with one another, and with the Ecliptick.

III. The Direction of the Course of Comets in their Orbits is not determin'd one way, (as is that of the Planets, from West to East) but is uncertain;

uncertain; about one half of them being *direct* in their Motion, and the other *retrograde*.

IV. The Comets in their Descent to, and Ascent from the Sun, pass through the Planetary System, and usually through that intire System, from *Saturn* to *Mercury*.

V. The Comets therefore may approach to any of the Planets themselves, if their several Plains and Positions and Periods be rightly adjusted for that Purpose, but not otherwise.

VI. The Law of Gravity, or mutual Attraction of Bodies equally belongs to the Comets as to the Planets; and the Effects of the same in the Acceleration and Retardation of Bodies; in the Flux and Reflux of all Fluids upon or beneath the Surface of the Planets or Comets themselves, and the like, are equally to be allow'd in the one case as in the other.

VII. Comets are, generally speaking, of the same Magnitude with Planets, and as they are some bigger and others lesser: I mean this of their real solid Bodies, as distinct from their Atmospheres and Tails. For,

VIII. Besides these Bodies or *Nuclei* themselves, which are solid, compact and durable, the Comets are encompassed with a vastly large, confused and Chaotick Atmosphere; their remoter Regions being full of thin Vapours; and those nearer the Centre full of grosser Exhalations, part of which, when near the Sun, evaporate into prodigiously rare Tails, and when they come very near the Sun, into prodigiously long ones also.

IX. The Phænomena of Nature, particularly those of Mountains, and of the Variation of the Magnetick Needle; do best agree to the Hypothesis of a dense Fluid within the Earth; on the Surface

Surface of which our upper Crust rests; and cannot fairly be solv'd without it. Whence we ought to allow that to be most probably the real Constitution of our Earth. [See *New Theory*, *passim*.]

X. The Deluge of *Noah* began the 17th Day of the second Month from the Autumnal Equinox, or according to the present *Hebrew* Chronology, on *Friday, Novemb. 28.* in the 2349th Year before the Christian *Æra*, or according to the more accurate Chronology of the ancient *Hebrew*; in the Days of *Josephus*, and of the *Samaritan*, agreeing almost exactly therewith, *Decemb. 2.* in the 2926th Year before that *Æra*. The former Part of this Proposition has been ^{Hypoth. 9.} proved in my *New Theory*; and the latter, in my *Essay towards restoring the True Text of the Old Testament*: to which I must refer the Reader.

PROPOSITION.

That Comet which last appear'd *A. D. 1680*, ^{See New} in its Descent to the Sun, the first Day of the ^{Theory,} Deluge of *Noah*, came very near to our Earth, ^{Hypoth.} and was the Physical Cause of the same Deluge. ^{11.}
This appears from the Evidence following:

(1.) We have some Testimonies in Antiquity, set down by *Hevelius* in his *Cometographia*, and ^{N. Theor.} it is imply'd in both *Plato's* and *Pliny's* Accounts, ^{p. 185—} that a Comet did not only appear at the Time ^{189.} of the Deluge, but had an Influence upon the same also.

(2.) The Astronomical Theory of this Comet, ^{Deluge} built upon the most exact Observations and Cal- ^{Demonst.} culations that ever were made about them, and ^{p. 6, 7, 8.} stated from *Sir Isaac Newton's* wonderful Discoveries,

veries, by Dr. *Halley*, our famous Professor of Geometry at *Oxford*, does now clearly shew, that this very Comet did come by at the Time here assign'd. For the Reader is to know, that Sir *Isaac Newton* and Dr. *Halley* have lately discover'd that Comets have their Periods as fix'd and regular as the Planets, though usually much larger; that one of those Comets has return'd three or four Times already, and has its Period about 75 Years; and that another of them has probably come round twice also after a Period of about 129 Years; and, which is the greatest Discovery of all, that this last most remarkable Comet has also several Times been seen already, within the Period of certain Records, I mean in the 44th Year before the Christian *Æra*: and again *A. D.* 531 or 532; and yet again, *A. D.* 1106. Besides its last Appearance *A. D.* 1680; whereby we know that it revolves in about 575 Years; and that by consequence, if we go still backward about that Number of Years, or rather a little farther, we shall discover all the Times when it has come round in the ancienter Ages of the World. I add, or rather a little farther backward, for since, as Sir *Isaac Newton* well observes, this Comet goes so very near to the Sun every Revolution, as to pass through the Sun's own Atmosphere, if it have any, it may be a small Matter retarded by it every Period, and by consequence its Velocity and Orbit, as also its Periods, may have been in general, taking several Revolutions together, a small Matter diminish'd; when we go backward to remote Ages, we must allow elder Periods to have been somewhat longer than they are at present. In order therefore to discover whether

this

Princip.
Edit. 2.
p 480,
481.

this Comet came into our Regions at the Time assign'd, let us compute the Interval of this Comet's revolving as nice as may be. This Comet then, which had its last Period just 575 Years; admits we know of so much Inequality, that its two former Periods one with another, were but $574\frac{1}{2}$ Years, though whether they were singly equal, or which was the longer of those two Revolutions, we cannot now determine, by reason of the Want of Accuracy in the Historians, as to the Time of the Year when it appeared in the 6th Century. Let us therefore keep within this Latitude of three quarters of a Year Difference, attested to by Fact; and suppose, as we justly may, that in general those Periods have a little diminish'd, and so were somewhat larger formerly; and see how nearly this Calculation will bring us to the Time assign'd for the Beginning of the Deluge. 'Tis evident by Dr. *Halley's* Computation, in his Synopsis of Co-In Calce. ments; as well as from Sir *Isaac Newton's* own Scheme, that this Comet cross'd our annual Orbit, in its Descent *Novem. 11. A. D. 1680*, a little past One of the Clock in the Afternoon. Before that Time then we must suppose at least seven Periods to have interven'd, and that one with another, the former six Periods were $575\frac{1}{2}$ Years, as we know the last was just 575. Now six Times $575\frac{1}{2}$ with once 575, is 4028; which is exactly the Number of Years necessary in this Case, according to the present *Hebrew*. Nor need I make a new Computation for the more accurate Account of the ancient *Hebrew* and *Samaritan*, since the Difference of the two Chronologies is, in a manner the very same Number of Years [577] with one intire Periodical Revolution of this Comet, and so occasions no Difference

rence in the present Case. So that 'tis plain that Comet did descend into our Regions either at, or very near the Time when the Flood of *Noah* began; *i. e.* at or very near the Time, when it ought to have descended in order to approach near the Earth.

Del. Dem.
p. 5.

(3.) The same Astronomical Theory of Comets demonstrates, that the descending Part of the Orbit of this Comet was in the same Place where it ought to have been, in order to approach near the Earth, at the Beginning of the Deluge. For the descending Part of the Comet's Orbit cuts the Orbit of the Earth now in the second Degree of *Cancer*, as Dr. *Halley's* Table, and Sir *Isaac Newton's* Scheme both shew; which implies, that when the necessary Precession of the Equinox of about 46^{gr} in 4028 Years is allow'd for, we shall find that this descending Orbit was, at the Beginning of the Deluge, about the 17^{th} Degree of *Taurus*, or very near the Place where the Earth also was at the same Time. And this Character will agree, though not so exactly, with the other Chronology also.

Del. Dem.
p. 4.

(4.) The same Astronomical Theory of Comets demonstrates, what is most of all remarkable, that the Position of the descending Node of this Comet was most exactly such as was necessary to its Approach to the Earth, at the Beginning of the Deluge. This Node is now in the End of the 2^{d} , or Beginning of the 3^{d} Degree of *Cancer*, close by the Intersection of the Comet's Trajectory with the Line of the Earth's annual Motion, as is plain in Dr. *Halley's* Table, and Sir *Isaac Newton's* Scheme, and therefore according to the former Allowance of about 46^{gr} for the Precession of the Equinox, that

that Place of mutual Interfection, which was absolutely necessary in order to bring the Comet very near the Earth, was at the Beginning of the Deluge, about the 17th Degree of *Taurus*, or the very Place where the Earth was at the same Time. And that the Reader may the better discern the Necessity and Exactness of this wonderful Coincidence, he must observe that the Plains of all the known Orbits of the Comets are different from that of the *Ecliptick*; that, in particular, the Plain of the Orbit of this Comet is greatly so; the Angle of Inclination being above 60^{gr}. That therefore there is but one Place of Interfection in the entire Orbit of this Comet that could render it capable of approaching very near the Earth in its Descent: that without this wonderful Coincidence of these Trajectories, or their exact mutual Intersections, as here stated, both the other Agreements, I mean that of the Comet's *Period*, and of the *Situation* of the descending Part of its *Orbit* would have been to no Purpose, as to the Introduction of a Deluge upon the Earth. He must also observe, that by Dr. *Halley's* own Calculation, this Interfection is still so near the true Line of the annual Orbit of the Earth, that the Comet this very last Descent came, *Novem. 11.* about as near to that Line as the Moon it self, to that Line I mean which the Earth now describes; which yet seems to be somewhat more remote from the Sun than that which the Earth describ'd before the Flood, as will hereafter appear: He must therefore observe farther, that this Interfection would be much nearer to the Line of the Earth's Motion, when that annual Orbit was lesser, than it is at present; and that by consequence, the Comet would then approach

O o much

much nearer to the Earth, as within some 10,000 Miles, which as we see hereafter the Phænomena of the Deluge do require. And he ought farther to observe, that as it was 575 to one odds against the *Period* of the Comet's agreeing to the right Year of the Deluge; and 360 to 1 against the descending Part's Position in the proper Degree of the Ecliptick; so was it above 2000 to 1 odds against the Comet's Interfection of the Plane of the Ecliptick, so very near to the Line of the Earth's Motion, as it really does at this Day; and much greater odds against its Interfection of that Plane, as it must have done if it came within 10,000 Miles of the Earth. All which exact Coincidences do not only render our present Assertion extremely probable; it being next to impossible that all these Circumstances should have so exactly agreed by Chance, as they must have done if there were no relation between this Comet and the Deluge of *Noah*. Which way of Reasoning will be still stronger, if we consider,

Del. Dem.
P. 4. 5.

(5.) That this Comet appears to be exactly of a due Magnitude for the Solution of the Deluge also; as if it were peculiarly fitted for that Purpose. For though the Comets admit of a vast Variety, as to their Bigness, yet will none but a very small one, and of a particular Degree of Smallness too, agree to the Phænomena of the Deluge, as I have shew'd elsewhere. Now by Mr. *Flamsteed*'s Observations 'tis plain, that this Comet had its apparent Diameter the last Return about 20" only, when it was as far off as the Sun, or if we deduct 9" for that dense Part of its Atmosphere which always hides the *Nucleus* it self, we shall have that Diameter about 11", while the Moon's would be about 6"

Lem. 55,
& 85.
cum Co-
roll.
Hyp. 11.
§ 5. P. 203.

at

at the same Distance. Now the Cube of 11" ^{Ibid.}
 or 1331, being six Times the Cube of 6" or
 216, the Comet must have been about six Times
 as big as the Moon, or the seventh Part so large
 as the Earth, which is the very Bigness I have
 shew'd elsewhere the Phænomena of the De- ^{Ibid.}
 luge requir'd. And if we consider, that the
 greatest primary Planet *Jupiter*, is almost 8000
 Times greater than the least, *Mercury*; we
 shall find, as before, that 'tis highly improbable,
 that the particular Bigness of this Comet, as
 suited so exactly to the Case of the Deluge, should ^{See Lem.}
 yet have no relation to the Deluge notwith- ^{38.}
 standing.

N. B. These Circumstances, at least all but the
 last, are peculiar to this Comet and its Orbit,
 and do not belong to any of the rest now known,
 which render them much more considerable in
 the present Case.

COROLLARIES.

I. Hence we easily account for the Change of ^{N. Theor.}
 the annual Orbit of the Earth, from Circular, ^{Hypoth.}
 as it was most probably before the Deluge, to ^{7, 10.}
 Elliptical, as it has certainly been ever since.
 This being the natural Effect of the Attraction
 of the Comet, as it passed by before the Earth,
 which must accelerate its annual Motion, and
 thereby enlarge its Orbit, and lengthen its pe-
 riodical Time.

II. Hence we easily account for the just Quan-
 tity of the Enlargement of that annual Orbit
 and Period, *viz.* so much as the Difference of
 the present Elliptick Period or Year, is from
 the Antediluvian circular one; which is both

the exact Difference of those Orbits, and exactly equal to the Moon's Epact, or Difference of the Solar and Lunar Year with us, and is what this Comet about six Times as large as the Moon, and approaching within about 10,000 Miles of

N. Theor. the Earth would produce, as the Calculation
Lem. 58. does shew.

III. Hence also we easily account for the Position of the present Elliptick Orbit of the Earth, which as it ought has its *Perihelion* in, or very near that Place where the Comet passed by at the Deluge, and changed the Circle into an Ellipsis, as the Calculation does shew. And note, that this Character best agrees to the exacter

N. Theor.
Hyp. 11.
N^o. 3. p.
201.

IV. Hence also we learn the Reason of the Moon's Continuance with the Earth ever since the Deluge, notwithstanding its Acceleration by the Comet, which would naturally have alter'd its annual Period, and have separated it therefrom: for it appears by the Astronomical Tables, that the Time of the Beginning of the Deluge already assign'd, was about three Days and a half past the New Moon, at which Time the Distance of the Comet from the Moon, and its consequent Attraction of the Moon was equal to its Distance from the Earth, and its Attraction of the Earth by it, which would keep them together afterward, as the Calculation does shew. Nor is the like Coincidence wanting in the exacter Chronology.

N. Theor.
Lem. 57.

V. Hence we learn the Occasion of the Confusions in Astronomy and Chronology as to the Years Solar and Lunar, since the Flood; viz.
that

that the Length of the Year was changed at the Deluge; but in such a way, that that Change could not be observ'd by any.

N. Theor.
Corol. post
Hyp. 11.

VI. Hence we easily account for the Sustainance of those vast Numbers of Mankind and other Animals which it appears the Antediluvian Earth had upon it. There being probably no Comparifon between the primary Fruitfulness of the original Earth, which seems to have been, as we shall fee hereafter, free from an Ocean, and from very large Seas, which we have now, and the present less Fruitfulness of the Earth, arising from our Postdiluvian Sediment of the Waters of the Deluge, and that in great Measure as overwhelm'd with Water also.

N. Theor.
Phæn.

35.

N. Theor.
Phæn. 45.

VII. Hence we easily account for the better Temperature of the Antediluvian Air, as to its different Climates and Regions; free from violent and destructive Heat and Cold, Exhalations and Meteors, Contagions and Pestilences, Rains and Storms, than what we at present experience. These afflicting Circumstances since naturally arising from that Chaotick Atmosphere of the Comet, which our Earth carry'd off at the Deluge, and which has ever since constituted no small Part of our Earth's present Atmosphere; from which therefore the Antediluvians were intirely free.

N. Theor.
Phæn. 38,
39, 40, 41.

VIII. Hence we easily account for that wonderful Phænomenon of our Postdiluvian Air, the Rain-bow: which 'tis plain had no Place before the Flood. This being a natural Effect of such a stormy Atmosphere as ours is since the Deluge, which often precipitates the Vapours that

N. Theor.
Phæn. 42.

have long remain'd in it, till they become large and numerous spherical Drops of Rain; whence alone the Rain-bow is deriv'd; and does not let those Vapours which arise in imperceptible Fumes in the Day, descend gradually in Mists in the Night, as they did on our Earth in the Antediluvian Air, and seem to do in the Air of the Moon to this Day.

N. Theor. IX. Hence we easily account for the greater
Phæn. length of the Lives of the Antediluvians than of
43, 44, the Postdiluvians, and for the gradual Diminution
74, of that Longevity after the Flood till the Days of King *David*. For the better Temperature of the Antediluvian Air, with the probably better Vegetables of the Primitive Earth; together with the no Permission of the eating of Flesh, are such Foundations for a greater Longevity then, that we need not wonder at the shortening of Men's Lives upon the Alteration of Circumstances so material as those are at the Deluge. And since the Mixture and Fermentations of the Chaotick Particles, deriv'd from the Comet into our Atmosphere, would naturally be gradual, 'tis no Wonder if this their Effect in corrupting our Air and Constitutions, and in shortening human Life have been gradual also.

N. Theor. X. Hence also we easily account for those
Phæn. 45, mighty Waters, which our Ocean and large Seas do now contain; but which the Antediluvian Earth seems not to have had. These being the natural Remains of that immense Quantity of Water which the Vapours gain'd from the Comet's Atmosphere, and the Water which was by their Weight forced from the inward Parts of the Earth, at the Deluge afforded us: of which

which more distinctly under the next Particulars.

XI. Hence accordingly we easily account for those 40 Days and 40 Nights violent Rain; when the *Windows or Floodgates of Heaven were* Gen. vii. *open'd* at the Deluge, and which afforded the ^{11, 12.} main Quantity of Waters at that Time. It being evident upon Computation, that the Comet's N. Theor. Atmosphere, through which the Earth pass'd, ^{Solut. 60.} though at the Distance of 10,000 Miles, and which the Earth would carry off with it, would be equal to a Column of Vapours of about 100,000 Miles in Altitude, and whose Base was a great Circle of the Earth: which Column, though it were prodigious rare, would yet, when condensing gradually into Rain, and gradually falling down upon the Earth, afford abundantly enough for this violent Rain before us. Nor has there ever been assign'd a different Cause of these vast Rains at all sufficient for an universal Deluge, in any other Hypothesis whatsoever.

XII. Hence also we easily account for the Beginning of those Rains, and of that Deluge, exactly and only on the Year, Month and Day assign'd; since that and only that Year, and Month and Day, this Comet did or could approach near enough to the Earth to afford it Water for this Deluge. I mean this within an intire Period of 575 Years. Nor does it appear, that any other ancients or later Return of this Comet happened when the Earth was near the same Place of its annual Orbit, which yet is absolutely necessary for that Purpose. Nor does the Situation of any other known Comet render ^{Del. Dem.} its near Approach to the Earth so much as possible. ^{p. 3, 4.}

sible. Which Circumstances give us the plainest physical Account of the exact Time of the commencing of the Deluge, according to both the sacred and prophane Testimonies thereto relating.

Gen. vii. 11. XIII. Hence also we easily account for that other main Cause of the Deluge, the *breaking up of the fountains of the great deep*: For when the near Approach of the Comet to the Earth had render'd the Shape of that internal dense Fluid, on which its upper Crust rested, so very oblong and oval; and its Surface so much larger than before, as to occasion the opening of its perpendicular Fissures, which are visible at this Day, especially in stony and mountainous Places; when this, I say, was the case; the vast Weight of the new additional Waters from the Comet would attempt to press this upper Earth deeper into the dense Fluid below, especially in the Vallies, which Pressure would naturally squeeze up the subterraneous Waters, through the mountainous Fissures then open, and would throw them out upon the Earth, and so joyn the subterraneous to the cometical Waters, for the Supply of a Quantity sufficient for so vast a Purpose as that of an universal Deluge. Nor has any other Hypothesis, I think, accounted for these secondary Waters for the Deluge, any more than for the former.

Gen. vii. 11. XIV. Hence also we easily account for the exact Time of the thus *breaking up* or opening *all these Fountains of the great deep*; viz. the very first Day of the Deluge; that Day, and that only being, in this Theory, the peculiar one, when the Comet was near enough to open the same Fissures.

XV. Hence

XV. Hence we easily account for the exact Time of *Noah* and his Family, and all the Animals going into the Ark, viz. the very same Day when the Flood began: since it appears by the Situation of the Centre of the Main or Northern Continent of the present Earth, arising probably from that highest Elevation of the internal dense Fluid, which was rais'd by the nearest Approach of the Comet thereto, and by the Situation of the Place where *Noah* lived before the Deluge; which seems to have been in *China*, far Eastward from that Centre, and from those *Gordyeen* Mountains where the Ark rested afterwards; it appears, I say, by these Situations, as compar'd with the diurnal Motion, that the Ark was in that Hemisphere of the Earth, which was still free from any Rains, this Day of the violent Descent of the Vapours of the Comet's Atmosphere, or first Day of the Deluge; and that therefore this was as proper a Day for the Entrance of *Noah*, his Family and the other Animals into the Ark, as any other whatsoever.

XVI. Hence we easily account for the Universality of this Deluge; that all the Regions of the Earth, *all the high hills under the whole heaven* Gen. vi. 19. *were covered*, even *Ararat* it self, the very highest 20. then of them all, and that on which the Ark N. Theor. Phæn, 41, rested, *15 Cubits* deep. It being no wonder that the before mentioned Column of Vapours, whose Base was a great Circle of the Earth, and whose Altitude was no less than about 100,000 Miles, should afford Water to drown the whole Earth. It being plain by Computation that such a Quantity of Vapour, though it were 500 times as rare N. Theor. Solut. 60. as Water, would, when it was turn'd into Water, cover

cover the Earth to a much greater Altitude, than that of any Mountain whatsoever.

Gen. viii. 2, 3. XVII. Hence we easily account for the *swaging of the Waters* by a wind passing over the earth, and by the goings and returnings of those Waters continually upon the ceasing of the Rains, and the Stoppage of the Eruption of the subterraneous Waters. For 'tis plain that after the Comet was gone, the Descent of the Vapours in Rain would at last exhaust and clear the Air of its Vapours, and put an end to the Rain; that also the natural Gravity of the Particles of the Earth, which had been pull'd a little asunder at the Deluge, would make them gradually settle closer and closer together, 'till with the Help of the incumbent Water they put a Stop to the ascending Streams, especially in the lower Fissures, that the Wind would carry off some of those Waters into the Air in Vapour, and would hurry the Waters themselves over the Fissures for their draining off by the same into the Bowels of the upper Earth, which was the main Receptacle: it being plain, that many of its Strata would receive mighty Quantities of them, and that they are in most Places full of such Water at this Day. Only we are to note here, that neither the Scripture, nor the Phænomena of Nature, suppose the intire draining away of the Waters to have been near so sudden as has been generally suppos'd, but the contrary; and that accordingly our Method of drawing them off, which is that of a very gradual Descent through the Fissures, and a Diffusion of them by degrees every way through the proper Strata of our Earth, does give the best Account of that Matter.

N. Theor. Solut. 63.

Ibid.

XVIII. Hence

XVIII. Hence we easily account for the two grand Continents of our present Earth, with the great Ocean which is now between them; viz. that the one Continent is larger than the other; that the larger lies most part on the North, and the smaller most part on the South side of the Equator; that the middle of the larger lies about 16 or 18 Degrees of Northern, and that of the smaller about the same number of Degrees of Southern Latitude; that the Distance between the Continents, measuring from the Northern South-eastward, is greater than that South-westward; that these Continents are unevenly terminated, with many Islands, usually nearest to, and the deepest Parts of the Ocean usually farthest from those Continents. All these Circumstances being no other than the natural Consequences of that double Tide and Elevation of the subterraneous Fluid, and incumbent Earth, at the Time of the Year assign'd for the Beginning of this Deluge, by the Approach of the Comet; and the Impossibility of the Earth's intire Restoration to its original or spherical Figure again; all which has been shewn particularly to the Readers in the New Theory it self, and may tolerably well be apprehended by the considering Readers of this Epitome.

XIX. Hence we easily account for the Phænomena of our present upper Earth, its Strata and Contents; those I mean which I have given an exact and particular Account of in the New Theory, from Dr. *Woodward's Natural History of the Earth*, viz. that it is evidently every where new and fictitious since the Deluge, and lies up- & Solut. on the old or Antediluvian Surface; that its Par- 75—90. ticles

ticles were at the Time of that Deluge loose and divided; that this heterogeneous Mass subsided gradually downwards, and that nearly, though not exactly, according to the Law of specifick Gravity; that it carry'd down with it, and inclos'd in itself vast Multitudes, not only of Trees, Plants, and Vegetables, but also of Fishes which are at this Day lodg'd therein, and their Shells found sometimes in the very middle of Beds of Stone and Marble; all which Circumstances are exceeding remarkable, and the plainest Demonstration that there has been anciently such an universal Deluge. Nor are these strange Phænomena other than the natural Result of such chaotick and confused Vapours as the Atmosphere of a Comet mix'd with the Waters squeez'd out of the Bowels of the Earth, must leave for its Sediment upon the ancient Surface. Nor is the depth of this factitious Earth of 200 or 300 Feet, at all too great for the Sediment of Waters which cover'd, even at that Time, the highest Mountains; which Mountains yet in that oval Shape of the Earth then, must have been much more elevated than any that are now upon it.

XX. Hence we easily account for the lengthening of the Space of a Day, or Retardation of the diurnal Revolution of the Earth, which is but necessary for the adjusting the Solar and Lunar Years before the Deluge. For upon Computation the additional Quantity of Matter derived from the Comet, and spread over the Earth, would retard the diurnal Motion, and lengthen the Day in the Proportion of the present Lunar Year of $355\frac{1}{2}$ Days, to a Solar of 360 Days, which seems to have been the Astronomical Year of the Antediluvians, as it appears to have thence been

been the Civil Year over all the World for many Ages after the Deluge. Of which Phænomena this Retardation of the diurnal Motion of the Earth, which must necessarily arise in our Account of the Deluge from a Comet's Atmosphere, gives us the most easy and agreeable Solution possible.

XXI. Hence we also easily account for the Change that was made of the Course of the four Rivers of Paradise by the Deluge, whereby the *Mosaick* Description, suited to their Antediluvian, does not now agree to their Postdiluvian State. For the Channels of those old Rivers being now, according to this Account, buried some hundreds of Feet under the Sediment of the Waters of the Deluge, 'tis no great wonder that the new Rivers of the same Countrey, do not well answer to the Descriptions of the old ones. Tho' still the present Rivers *Tigris* and *Euphrates* do preserve in general the Situation of the ancient Paradise to this Day: as I have elsewhere shew'd.

N. Theor.
Hyp. 10.
Gen. ii.
10-14.

N. Theor.
Hypoth. 4.

XXII. Hence, lastly, we easily account for this Deluge as it was Divine; and as it was a just and terrible Judgment brought by the Providence of God for the Destruction of a wicked World. For though the Solutions here given are mechanical, and depend upon the known Laws of Matter, Motion and Gravity; and the Calculations are strictly astronomical and geometrical; as in all physical Solutions they ought to be: Yet is all this no Impediment to the Interposition of God and his Providence in this grand Catastrophe, but rather a sure Demonstration of the same. For the principal Foundation of Mechanism, I mean the Power of Gravity, is it self now known to be the direct Interposition of the Divine Power.

The

The Orbits and Periods of Comets and Planets are known to be no way fix'd by Necessity or Chance, but to have been originally ordered and adjusted by Divine Providence. Nor could such a Coincidence as this of the near Approach of this Comet to our Earth, just at such a Time, when the Wickedness of the World was so prodigiously great; just to such a Distance as should drown the rest of the old wicked World, without destroying the Earth itself, or even the small righteous Remains of it in the Ark; just in such Circumstances as should make way for the Preservation and Recovery of Mankind, and the other Animals by a new Stock afterward, and all this exactly according to the Denunciations and Threatenings of God by *Noah* 120 Years before it came; be without the immediate Concern of Divine Providence; and without affording a most convincing Demonstration of God's Justice in drowning the wicked and impenitent, and of his Goodness in preserving the one righteous Family then in the World, to all future Generations: or in *St. Peter's* Words, of *Not sparing the old World*: but of *saving Noah, the eighth Person a Preacher of righteousness*, when he brought this amazing flood upon the world of the ungodly. But of this and many other Particulars, with the noble and important Consequences from these Solutions, especially as so exactly agreeing with the Accounts given us in Holy Scripture, I have treated more largely elsewhere: whither therefore I must refer the curious Reader, who desires more compleat Satisfaction.

N. Theor.
Del. Dem.
Astron.
Princip. of
Religion.

London,
September 29. 1736.

WILL. WHISTON.

Figure 1.

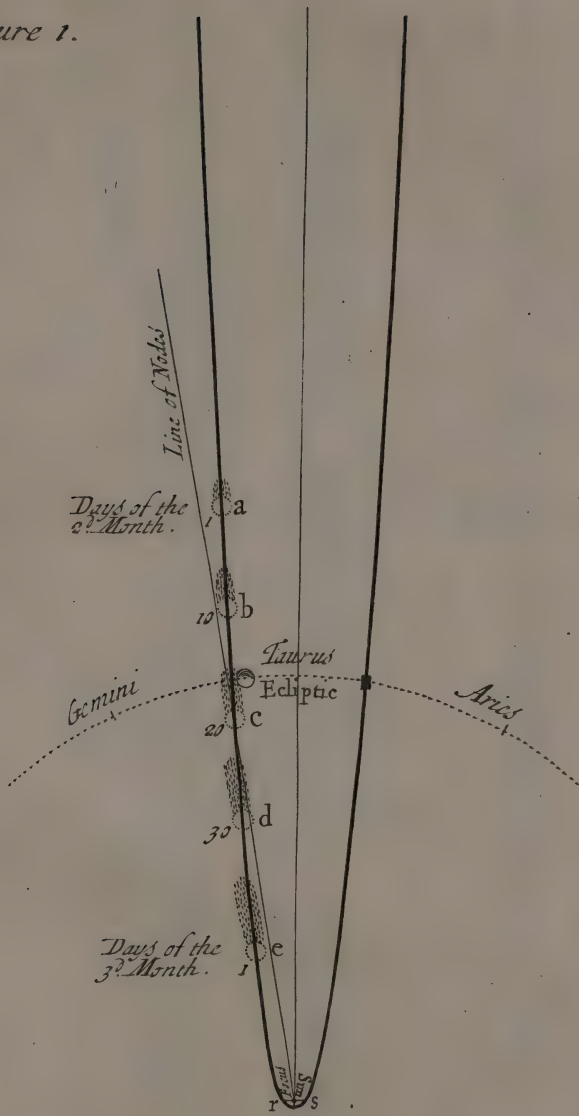
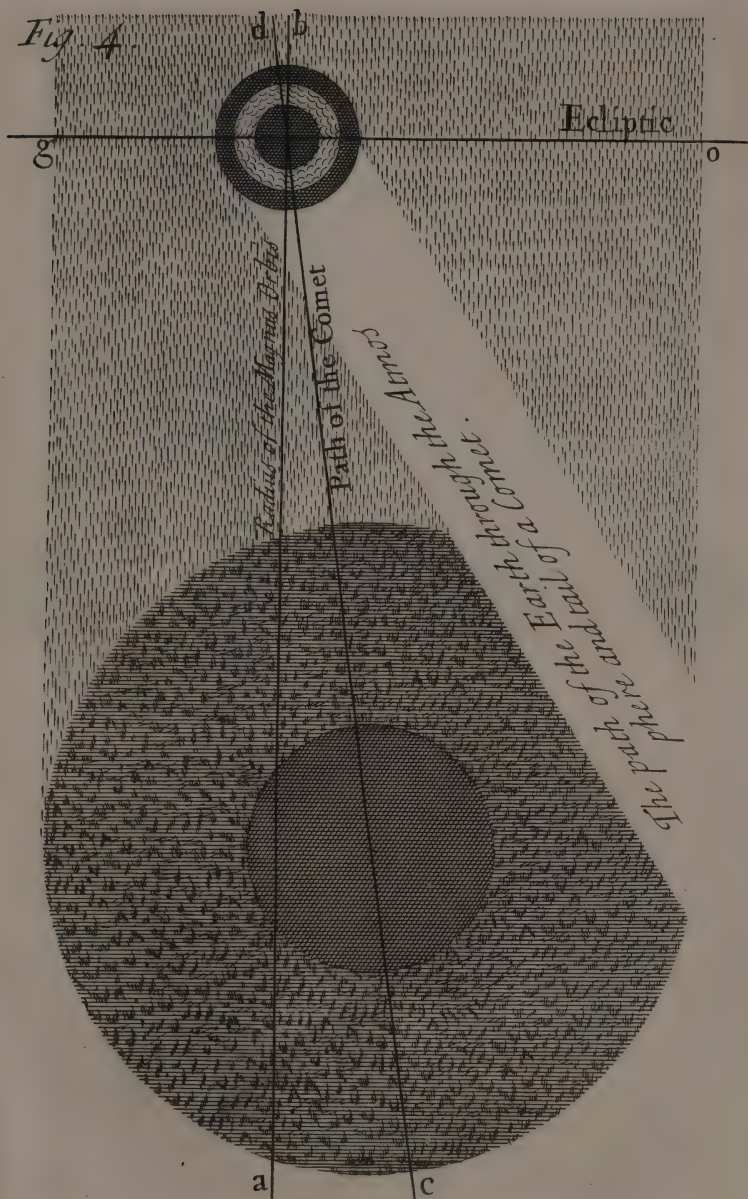


Fig 4



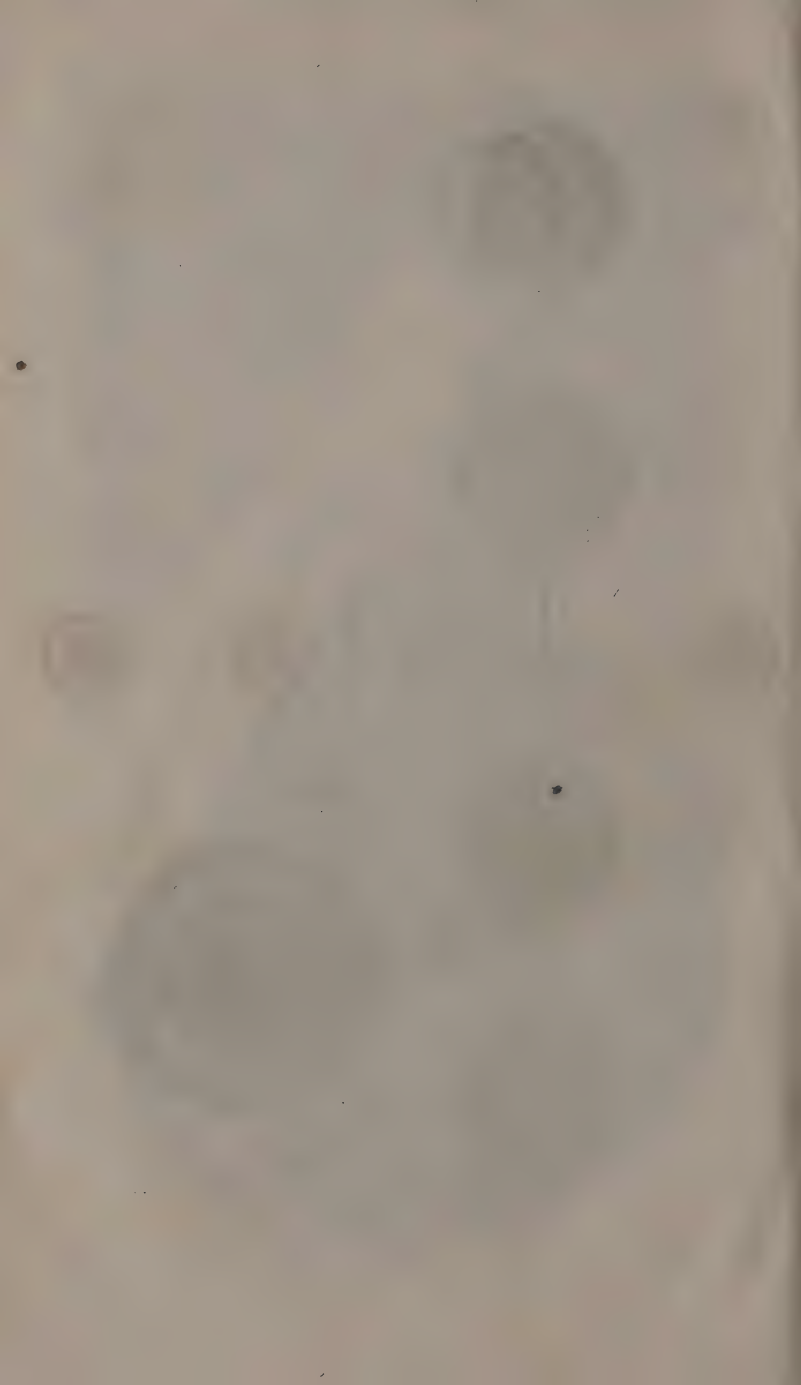


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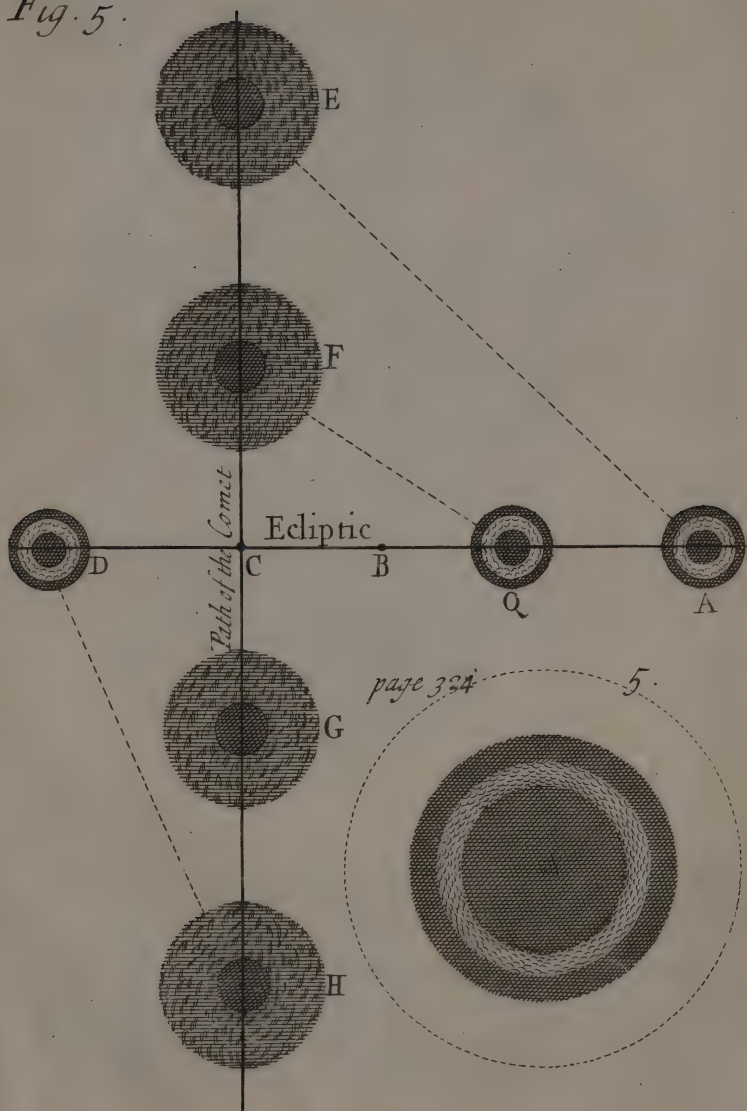


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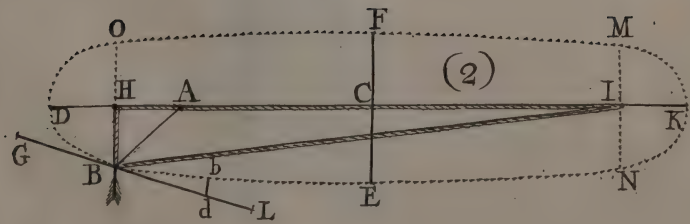
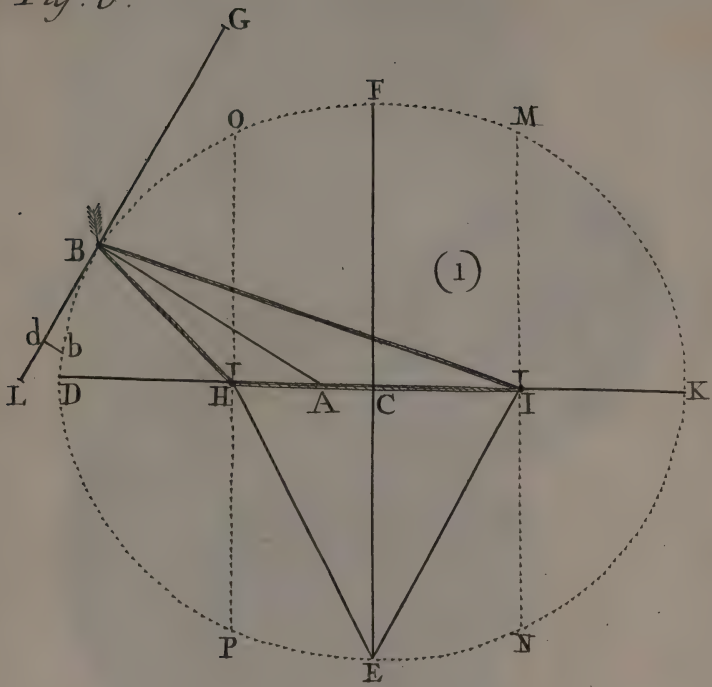
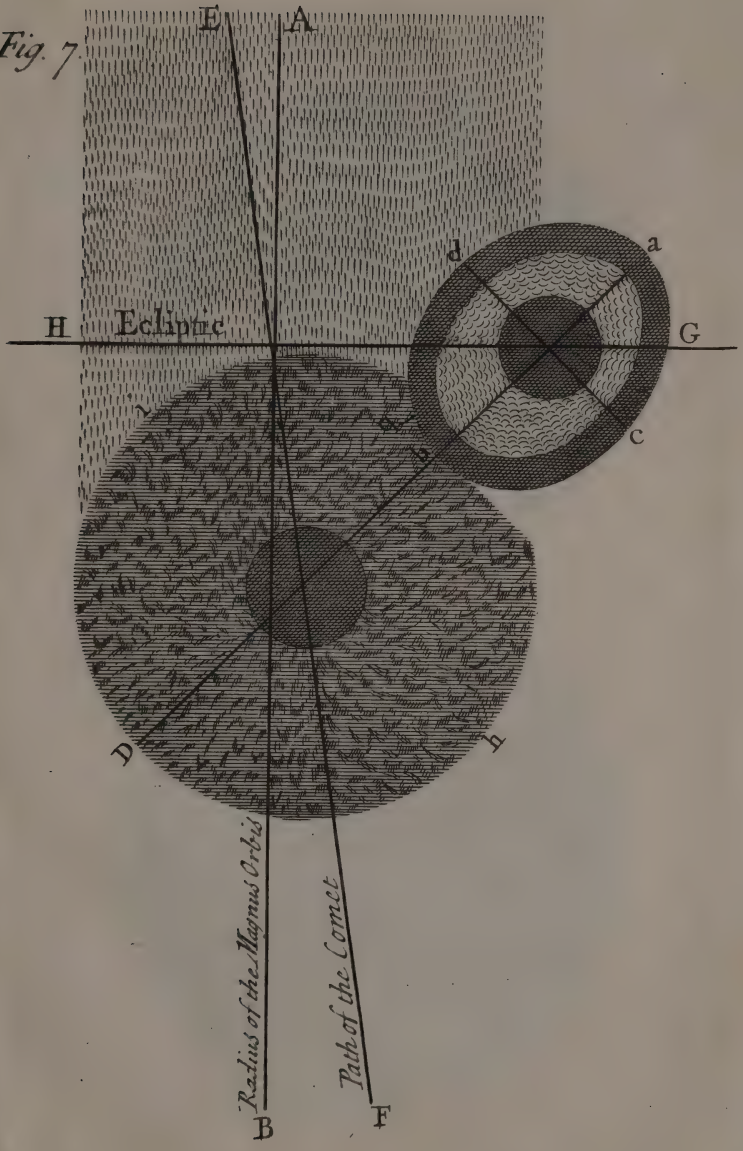




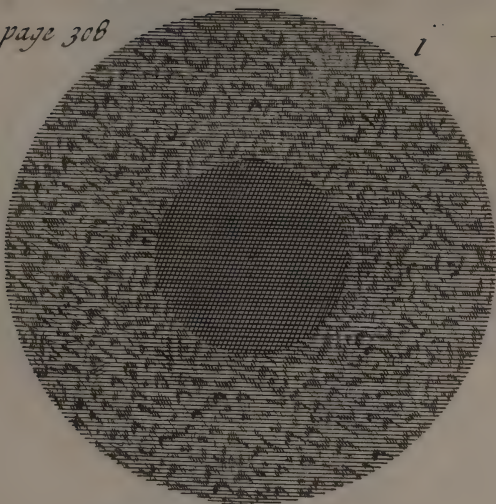
Fig. 7.



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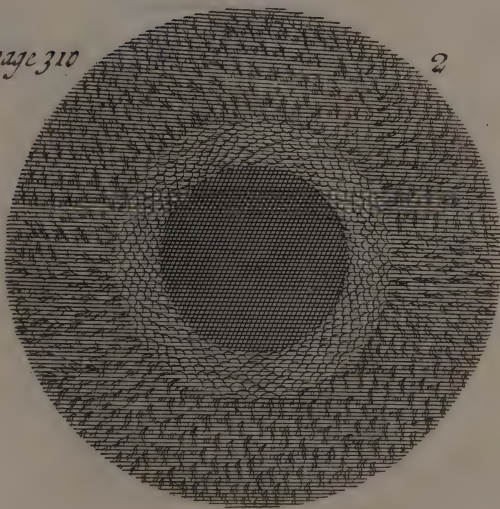
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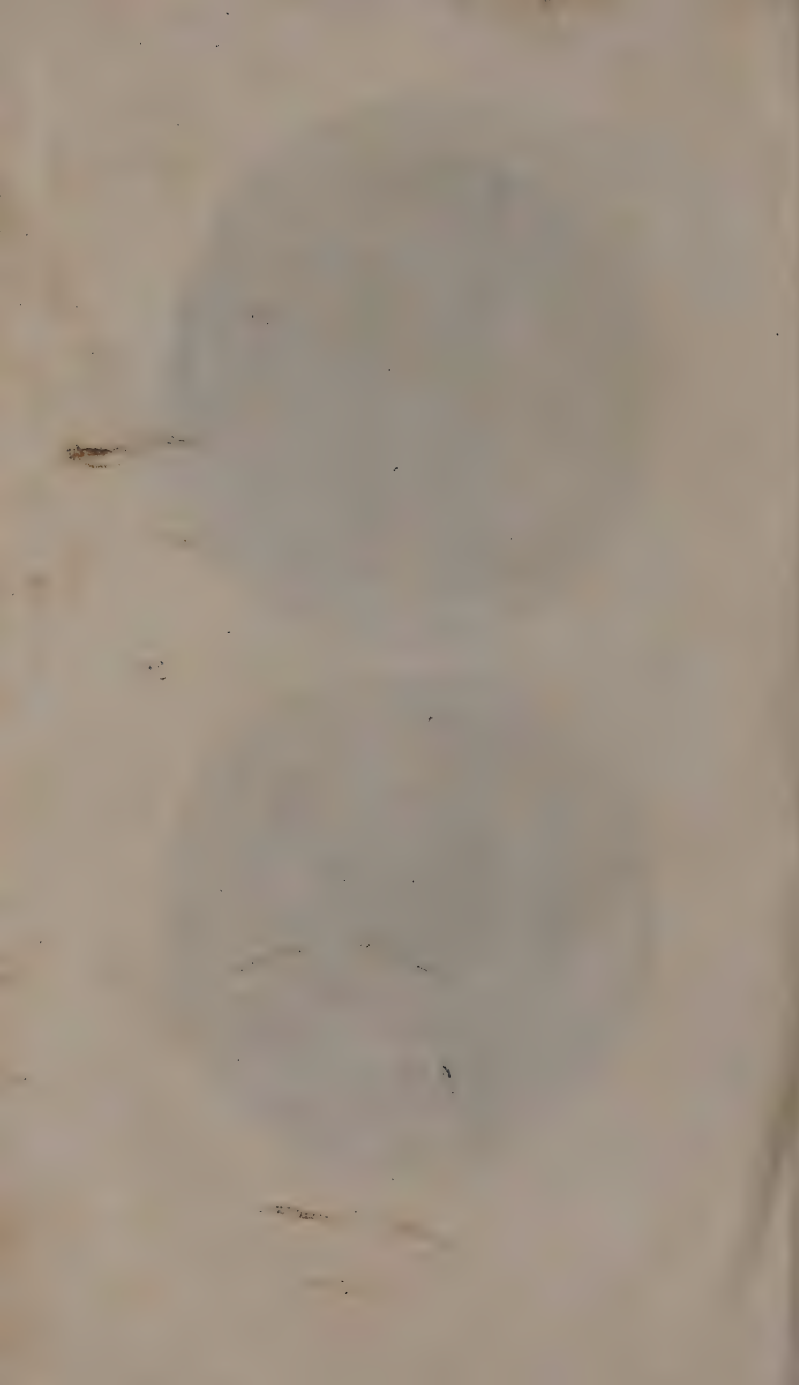
Plate 9.



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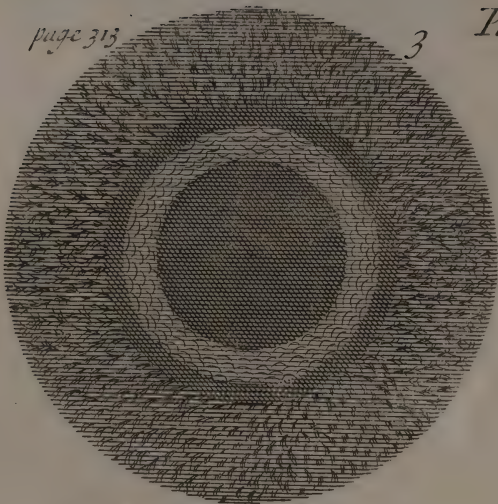




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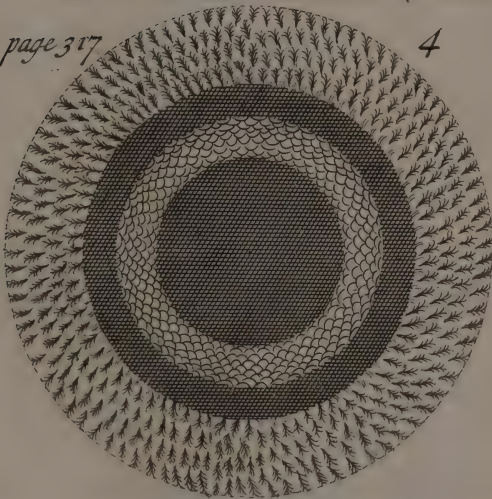
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Plate 10



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